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THESIS

THE EFFECT OF STATE UNEMPLOYMENT RATE ON ATTRITION FOR FIRST-TERM U.S. NAVY ENLISTED PERSONNEL

by

Erica L. Thompson

March 2011

Thesis Co-Advisors:	Stephen Mehay Jeremy Arkes

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Four separate probit models were formed to analyze the effect of the state unemployment rate on first-term attrition for Navy enlisted personnel for cohorts during six months of service, 12 months of service, 24 months of service and 45 months of service. A second model type analyzed attrition over a specific period of time. Attrition was estimated during six months, between 6-12 months of service, between 12–24 months of service and between 24–45 months of service. These models were developed to predict the likelihood of an enlisted sailor attriting when state unemployment rates increase by one percentage point.

The independent variables for the two models types included demographic variables, such as Black, White, Asian, Native American, other race, education years, age, female, male, AFQT_score, pay grade dependents, no dependents, first enlistment with bonus, and first enlistment no bonus. Dummy variables for 1999-2007 and dummy variables for states were created to explain any bias of attrition by circumstances, such as the economy.

Consistent negative effects on attrition included unemployment rate, Blacks, AFQT scores, years of education and pay grade. Positive influences included age, having no dependents, and females.

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EFFECT OF STATE UNEMPLOYMENT RATE ON ATTRITION FOR FIRST-TERM U.S. NAVY ENLISTED ATTRITION

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MASTER OF SCIENCE IN MANAGEMENT

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The independent variables for the two models types included demographic variables, such as Black, White, Asian, Native American, other race, education years, age, female, male, AFQT_score, pay grade dependents, no dependents, first enlistment with bonus, and first enlistment no bonus. Dummy variables for 1999-2007 and dummy variables for states were created to explain any bias of attrition by circumstances, such as the economy.

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TABLE OF CONTENTS

I. INTRODUCTION 1
  A. RECRUITING 3
  B. RETENTION 4
  C. ATTRITION 5

II. LITERATURE REVIEW 7
  A. ATTRITION STUDIES 7
    1. Attrition and Recruit Training 7
    2. Attrition and Education 9
    3. Attrition and Unemployment 9
  B. SUMMARY 11

III. DATA DESCRIPTION 13
  A. INTRODUCTION 13
  B. DATA SOURCES 13
  C. SAMPLE 15
    1. Sample Characteristics 15
    2. Descriptive Statistics 15
    3. Dependent Variable 16
    4. Explanatory Variables 17
      a. Unemployment Rate 18
      b. "Race" 18
      c. Education Years (educ_years) 19
      d. Age (age) 20
      e. Pay Grade (pg) 21
      f. Female (female) 22
      g. AFQT Score (AFQT_score) 22
      h. Dependents (DEPENDENTS) 23
      i. First Enlistment, No Bonus (First_Enl_NB) 23
      j. Yeardum (Yeardum) 24
      k. Statedum (statedum) 24

IV. METHODOLOGY AND RESULTS 25
  A. INTRODUCTION 25
  B. RESEARCH DESIGN 25
  C. THEORETICAL FRAMEWORK 26
    1. Binary Response Model 26
    2. Probit Models 26
    3. Model Specification 27
  D. RESULTS 29
    1. Cohort-Based Data Results 30
      a. 6-Month Attrition Model 30
      b. 12-Month Attrition Model 31

            - *c. 24-Month Attrition Model 31*
            - *d. 45-Month Attrition Model 32*
        - 2. Attrition Over Specific Time Intervals 33
            - *a. 6-Month Attrition Model (During Six Months) 33*
            - *b. 12-Month Attrition Model (6–12 Months of Service) 33*
            - *c. 24-Month Attrition Model (12–24 Months of Service) 34*
            - *d. 45-Month Attrition Model (24–45 Months of Service) 34*
    - E. SUMMARY 35

V. CONCLUSION 39
- A. RESULTS 39
- B. RECOMMENDATION 40

APPENDIX. 41

LIST OF REFERENCES 65

INITIAL DISTRIBUTION LIST 69

LIST OF FIGURES

Figure 1. Years of Education for Sample Population........20
Figure 2. Age at Time of Entry into Navy..................21
Figure 3. Pay Grade at Entry...............................22
Figure 4. Average AFQT Scores for Population Sample.......23

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LIST OF TABLES

Table 1. Descriptive Statistics..........................16
Table 2. Dependent Variable Means.........................17
Table 3. Percentage Distribution of Sample by Race.......19
Table 4. Alternative Model Specification: Attrition Periods..28
Table 5. Unemployment Coefficients in Models Without State Dummies..................................29

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LIST OF ACRONYMS AND ABBREVIATIONS

AFQT	Armed Forces Qualification Test
DoD	Department of Defense
GAO	Government Accounting Office
LOS	Length of Service
NEM	Navy Econometric Model
NPRST	Naval Personnel Research, Studies and Technology
RTC	Recruit Training Command
U.S.	United States

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I. INTRODUCTION

In early 2000, the United States (U.S.) economy thrived, inflation was relatively low, and the labor market was tight. The unemployment rate was only 4 percent. The U.S. population was 282 million.

As of 2010, the U.S. population is 308 million, or 9 percent more than 2000. The national unemployment rate is currently nearly 10 percent and the state unemployment rates can be higher or lower than the national average (BLS, 2011).

Since 2008, the United States has been facing significant economic challenges and economic growth has slowed considerably. Millions of homeowners have lost their homes and their jobs, incomes have declined, retirement savings accounts have lost trillions of dollars and the unemployment is at its highest since 1982 when the unemployment rate was 9.7 percent (BLS, 2011). By December 2010, 14.5 million people in the United States reported being unemployed reflecting a rate of 9.4 percent. This represents a 0.5 percent decrease from November 2010, when the unemployment rate peaked at 9.9 percent. This drop constitutes a decrease of 15.2 million fewer unemployed persons by the end of 2010 (BLS Economic News Release, 2011).

In December 2010, the unemployment rates by demographic group were 9.4 percent for adult men, ages 20 years and older, and 8.1 percent for adult women, ages 20 years and older. For male and female teenagers, ages 16–19 years old, the unemployment rate was 25.4 percent (BLS Economic News Release, 2011).

Blacks accounted for the highest unemployment rate of any race or ethnic group at 15.8 percent followed by Hispanics at 13.0 percent. The unemployment rate for whites by the end of 2010 was 8.5 percent while it was 7.2 percent for Asians (BLS Economic News Release, 2011).

In 2000, at least one family remember reported being unemployed amongst 4.1 million families representing 5.7 percent of all families. By 2008, 7.8 percent of 6.1 million families reported that at least one family member was unemployed. The 2009 report reflected that 12 percent of families of the 9.4 million families had at least one unemployed family member. The year 2009 represents the highest level seen since the data survey began in 1994 (BLS Economic News Release, 2011; BLS Economic News Release, May 2001).

The current state of the economy affects nearly every industry in the United States as sales and revenue decline, which have resulted in many private corporations downsizing operations by laying off employees and cutting salaries. The Department of Defense (DoD) is not immune to these budget pressures as tax revenues fall and budget deficits grow. The federal government and DoD are facing drastic budget cuts that will affect the health of the overall U.S. economy and the cost of meeting national security objectives. Since manpower constitutes one of the biggest costs to the military, budget cuts will significantly affect military manpower and recruiting.

The U.S. Navy faces continuous challenges in recruiting and retaining talented and qualified individuals. It substantially invests in training, time, equipment, and other related areas. The Navy’s military members acquire skills, knowledge, and training during active duty service. As of fiscal year 2009, over 271,350 active duty enlisted personnel served in the Navy. Its service members and the skills acquired while on active duty are essential to the Navy’s ability to meet the technological challenges of future requirements.

In the early 2000s, attrition was particularly high due to the tempo and multiple deployments related to the Iraqi and Afghan operations. It was extremely challenging to recruit and retain individuals during the high tempo of the Global War on Terrorism (GAO, 2005). Now that the war is drawing down and deployment tempos are decreasing, fewer personnel are needed to support the two wars. Despite the economic crisis and slow recovery, the United States is reducing its national debt and the Navy faces manpower budgets cuts, which will potentially affect its recruiting, retention and attrition programs.

A. RECRUITING

Military operations launched in response to the September 11 attacks created challenges in the Navy’s ability to recruit new personnel (GAO, March 2005). Despite the overseas contingencies, the Navy succeeded in meeting its recruiting goals during fiscal years 2000–2009. The Navy consistently exceeded its recruitment goals between fiscal years 2006 and 2009 when it averaged over 100 percent of its mission (Navy Recruiting Command, 2011).

B. RETENTION

The Navy faced challenges with meeting its retention goals, beginning in 2001. Its most significant retention shortages occurred in fiscal year 2005. The Navy missed its retention goal by 2 percent and was unable to retain its service members with less than six years of service. In addition, the Navy missed its retention goal for service members with 6–10 years of service by 8 percent. The Government Accounting Office (GAO) reported the cost of keeping an enlisted service member in 2004 at $103,000 annually (GAO, November 2005).

One of the Navy’s fiscal year goals for 2010 was to increase the number of E–4 to E–9 (top six enlisted pay grades) to 73.25 percent to retain the Navy’s corporate knowledge of experienced leaders while allowing opportunities for advancement (The Highlights of the Department of the Navy FY 2010 Budget, 2009).

As of the first three months of fiscal year 2011, the Navy has exceeded its retention goals for active duty enlisted personnel (Armed Forces Press, 2010). This increase in retention may result from the change in the economic climate and the drawing down of the war operations in Iraq and Afghanistan. Sailors are less likely to separate and take risks in seeking other employment opportunities in the civilian sector during an economic climate of job losses and increasing state unemployment rates. High retention reduces costs that the Navy otherwise must spend to replace those who leave the Navy. Recruiting and retention will continue to be the Navy’s top priorities (BUPERS, 2010).

C. ATTRITION

First-term attrition occurs when a military member fails to complete his or her first-term enlistment contract. Most attrition occurs during basic training or the first six months of active duty service (GAO, June 2000). The separation of enlisted personnel before they complete their initial training involves direct costs (wasted training) and indirect costs (damaged to force stability). The first term of enlistment is usually a 4-year term but some terms may be six or eight years in length (GAO, February 2000).

Attrition occurs at anytime during the first term due to medical, physical, and performance problems, or fraudulent/erroneous enlistment. The Navy spends nearly $30,000 per recruit on approximately 35,000 sailors yearly and the percentage of recruits lost during basic training is nearly 9 percent. These financial losses from boot camp attrition alone equates to over $93 million annually (GAO, 2005; Golfin, 2005; CNA, 2007). The Navy must account for its personnel attrition losses by enlisting additional people (Eshwar et al., 2008).

In fiscal year 2008, 12.4 percent of all of the Navy’s enlisted active duty attrited. Attrition increased slightly in fiscal year 2009 to 12.5 percent and dropped to 11.9 percent during fiscal year 2010 for all enlisted personnel who attrited. The attrition rates have fallen due to the poor economy and proactiveness of leadership in their subordinate career decision making. However, due to significant cuts in the Navy’s budget, attrition remains an important cost-cutting objective. Any decrease in the attrition rate ultimately saves the Navy money. Consequently, first-term attrition is an on-going issue of significant concern to the Navy (The Highlights of the Department of the Navy FY 2010 Budget, 2009; The Highlights of the Department of the Navy FY 2011 Budget, 2010).

II. LITERATURE REVIEW

A. ATTRITION STUDIES

In general, attrition studies attempt to identify the factors and characteristics that influence the probability that an individual will decide to leave the military prior to completing his or her contract obligation. The following studies identify relevant predictor variables and hypothesized relationships.

1. Attrition and Recruit Training

In 2008, the Naval Personnel Research, Studies and Technology (NPRST) conducted a study on first-term enlistment, but also examined attrition in the Recruit Training Command (RTC) (Eshwar et al., 2008). In this study, RTC graduates were contrasted with RTC attrites. The 45,701 recruits were examined to determine reasons for attrition during basic training. The study was based on a longitudinal approach by tracking sailors during the first term of their enlistments. Five different questionnaires were administered, which examined personal factors and experiences before and after basic training (Eshwar et al., 2008).

The study examined first-term attrition to determine if significant differences existed in attrition among new recruits based on demographic and other characteristics versus those who graduated from recruit training and entered the fleet. It found that significant differences occurred in the attrition of recruits in basic training and RTC graduates (Eshwar et al., 2008).

Recruits who reported being unemployed at least six months prior to active duty service, were 8.9 percent more likely to attrite during recruit training than other recruits. Recruits employed prior to recruit training attrited at a rate of 8.4 percent. Very little difference exists between employed or unemployed recruits prior to joining the Navy. Recruits who worked part-time or full-time and attended school full-time were less likely to attrite during basic training at a rate of 6.8 percent to 6.9 percent. Surprisingly, those employed full time six months prior to entering the Navy had the highest levels of attrition (Eshwar et al., 2008).

Recruits who reported they had earned their GED were more likely to attrite at a level of 11.7 percent compared to recruits who had high school diplomas from traditional schools who attrited at a rate of 7.4 percent. Those who earned their high school diplomas through homeschooling attrited at a rate of 8.0 percent. Recruits who reported to have not graduated from high school attrited at a rate of 11.6 percent. The level of attrition for recruits with GEDs was very similar to those who did not graduate from high school. Those with bachelor degrees had the lowest attrition at a rate of 5.7 percent. High school graduates were more than likely to graduate from recruiting training. Attrition during recruit training decreased as the recruits’ number of years of education increased (Eshwar et al., 2008).

This study does mention “few or no civilian jobs” as one of the 24 reasons respondents reportedly joined the Navy. However, it does not mention any factors associated with unemployment or attrition amongst those recruits who joined due to the lack of civilian jobs. The NPRST reported that this reason is statistically insignificant in its influence as to why recruits joined the Navy (Eshwar et al., 2008).

2. Attrition and Education

In a study conducted by Hodari & Wenger (2004) the researchers analyzed the effect of non-cognitive factors on attrition and found that non-cognitive factors significantly influenced attrition. Using Logit regression, the researchers found that those who enlisted before turning 18 years of age were more likely to attrite at a rate of 25.7 percent more than any other age group overall. 18 year-olds who enlisted and had high school diplomas attrited at a rate of 23.7 percent. Enlistees aged 18 years old or less who did not possess a high school diploma attrited at a rate of 47.8 percent. This rate of attrition is 7.8 percent higher than those 18 year-olds who attrited at a rate of 40.7 percent. By contrast, those who did not have high school diplomas and were aged 20 years or older had a level of attrition of nearly 40 percent overall. The study mentions that this result may be attributed to older recruits having some work experience or skills prior to entering the Navy. The study makes no mention of unemployment in relation to attrition (Hodari & Wenger, 2004).

3. Attrition and Unemployment

Another study conducted by Cox (2003) analyzed the relationship between attrition and enlistment bonuses using a discrete-time hazard model for first-term enlisted. This studied reported that cohort accessions for fiscal years 1993 to 1997 had very high attrition rates. In this study, the unemployment rate decreased from 6.9 percent in 1993 to 5.1 percent in 1997. The change in the economy specifically affected attrition of the Navy enlisted servicemembers in the nuclear ratings with 6-year contracts. The attrition over 24 months of active duty service rose from 19 percent in fiscal year 1993 to 27 percent in fiscal year 1997. This study does not directly analyze the relationship between attrition and unemployment. However, unemployment is judged as a factor affecting attrition during this time (Cox, 2003).

A strong economy and healthy job market may contribute to a decrease in attrition. A study conducted in 2000 by Gasch et al. suggests that the economy and job market do influence the Navy's attrition (Gash et al., 2000).

Focus group and survey evidence conducted by the researchers show that 57 percent of the respondents agreed or strongly agreed that private civilian opportunities influenced their decision to separate from the Navy (Gash et al., 2000). Additionally, 37 percent agreed or strongly agreed that the civilian opportunities were the primary reason for their attrition from the Navy (Gash et al., 2000).

Another study examined attrition rates for recruits from various states with high and low unemployment rates (Ackerman et al., 2003). The recruits were tracked in 1997 from basic training to "A" school or skills training school. The results showed that 80 percent of the recruits from states with high unemployment completed boot camp. In contrast, only 74 percent of the recruits from states with the lowest unemployment rate completed training and entered the fleet. The results were the same for years 1994 through 1998 (Ackerman et al., 2003).

In a study conducted on the delayed entry program for soldiers, Buddin (2005) reported that unemployment rates had a significant effect on the Basic Combat Training (BCT) attrition for the Army’s delayed entry program. The unemployment rate at the time of entry caused attrition to fall by .89 percentage points. These findings were consistent with the stated hypothesis and previous study results that a significant relationship exists between unemployment and attrition (Buddin, 2005).

B. SUMMARY

In review of the studies, research suggests attrition is highest during the first since months of the enlistment contract. Individuals who were employed six months prior to enlisting into the Navy had the higher levels of attrition versus those who were unemployed prior to entering the Navy. Recruits with GEDs during recruiting training attrited at a higher level than those with high school diplomas. Those with a college degree were less likely to attrite. The more education an individual has upon entry into the Navy, the less likely he or she is to attrite.

The researchers in the literature review found that those who enlisted before turning 18 years of age were more likely than any other age group to attrite. Individuals who enter the Navy from states with high unemployment were most likely to complete basic training versus those from states with low unemployment rates.

Several common relationships have been identified existing between state attrition and unemployment, attrition, age, and years of education that significantly affect the Navy enlisted attrition rates. These relationships form the basis for the models indentified in this thesis. The next chapter reviews the data used in the multivariate analysis and specifies models used to estimate the effect of unemployment on attrition and describe the dependent and explanatory variables used in the models.

III. DATA DESCRIPTION

A. INTRODUCTION

This chapter discusses the sources of data used in the analysis of this study and describes the dependent and independent variables used in the regression analyses.

B. DATA SOURCES

The data for this thesis were taken from two sources, the SERCO and SAG Corporations and the Bureau of Labor (BLS). The SAG and SERCO Corporations in Alexandria, VA used data from their Navy Econometric Model (NEM) for the Naval Postgraduate School. The NEM data contains U.S. Navy enlisted attrition data. The dataset was created using the data from NEM and the Bureau of Labor (BLS) state unemployment rates but analyzed using STATA, statistical software used for data analysis, management and presentation (STATA, 2011).

Two data sources used in this thesis were merged into one consolidated data set for analyzing the effects of state unemployment rates on attrition rates for Navy enlisted attrition. The effect of state unemployment rates on attrition for Navy enlisted personnel is analyzed after six months, 12 months, 24 months and 45 months of military service to determine the likelihood of attrition.

NEM data contain records of first-term attrition for Navy enlisted personnel who enlisted between the years 1999–2009. The data contains 416,654 observations and 62 variables, spanning a time period that ensures sufficient sample sizes of all applicable independent variables, such as education, gender, AFQT score, race, age, event year, enlistment type, paygrade, term of enlistment and dependent status.

Individuals who entered the Navy as E-1s through E-9s were analyzed and observations with missing or unreliable data were deleted. Individuals who separated early from the Navy with loss codes related to the following were not considered as “attrites” and were deleted.

- Death
- Retirement
- Acceptance of commission or transfer to officer program

The data were also limited to non-prior service, first-term enlisted, and non-reservists who became Navy active duty during fiscal years 1997–2007. The years 1998–1999 and 2008-2009 were deleted.

The dataset was further restricted, where applicable, for more detailed STATA analyses of demographic information. In addition, individuals with AFQT scores of 30 or less were dropped from the data set since the score is not conducive to Navy enlistment. These restrictions resulted in a data set of 305,537 observations and 91 variables.

The second data source, from the Bureau of Labor Statistics, contained state unemployment rates for years 1990–2007, delineated by state. The data set contained 918 observations and five variables. For the purposes of this thesis, the analysis was restricted to years 1999–2007. Years 1990-1998 were deleted to match the available unemployment data.

The merging of the two data sources resulted in a total of 305,736 observations and 142 variables, including `52 dummy variables for state and year. The merger created 918 additional observations and five variables. In addition, 58 dummy variables were created for state and year groups.

C. SAMPLE

1. Sample Characteristics

Sampling criteria designated for the target population included active duty non-prior enlisted first-termers who enlisted between years 1999–2007 and excluded individuals who separated from the Navy for reasons, such as death, retirement, acceptance to officer program, or disability without severance pay. The same data restrictions were applied in both modeling approaches.

The sample size after restrictions cohort-based is 305,078 observations. It is expected that as state unemployment rates increase, the attrition probability for enlisted personnel falls.

2. Descriptive Statistics

Table 1 provides summary statistics of enlisted attrition dataset used to estimate the parameters for the four separate models. As indicated in Table 1, the average unemployment rate is 5.34 percent. Table 1 also shows that the average unemployment rate ranges from 3.9 percent to 9.8 percent. The average AFQT score is 61.34 on a scale of 0-100. The average number of years of education for the sample is 11.96 years.

Demographically, the sample population is not that diverse. Females account for 18 percent of the population. Enlisted personnel, who are unmarried and have no children, accounted for 95 percent of the sample size.

The average age of an entrant is 20.80 years old. Table 1 shows that 18 percent of the enlisted personnel did not receive a bonus at the time of the contract enlistment.

Variable	Obs	Mean	Std. Dev.	Min	Max
attrite6 (during 6 months)	305078	0.14041	0.347413	0	1
attrite12 (during 12 months)	305078	0.054229	0.226469	0	1
attrite24 (during 24 months)	305078	0.083257	0.276271	0	1
attrite45 (during 45 months)	305078	0.095326	0.293666	0	1
attrite6 (between 0 - 6 months)	305078	0.14041	0.347413	0	1
attrite12 (between 6 - 12 months)	305078	0.194803	0.396049	0	1
attrite24 (between 12 - 24 months)	305078	0.278371	0.448198	0	1
attrite45 (between 24 - 45 months)	305078	0.373865	0.483829	0	1
unem	305078	5.343449	1.349528	3.9	9.8
black	305078	0.208671	0.40636	0	1
educ_years	304851	11.95809	1.023159	1	25
age	305078	20.80379	3.035393	17	57
female	305078	0.182475	0.386236	0	1
afqt_score	286493	61.34226	18.38923	31	99

Table 1. Descriptive Statistics

3. Dependent Variable

Attrite is the dependent variable that measures the behavior of the independent variables. Attrition is defined as the point at which a sailor fails to complete a contract obligation for military service, “0”=did not attrite; “1”=did attrite. An “attrite” variable was generated to analyze attrition during six months, 12 months, 24 months and 45 months. Attrition is also analyzed for military service between 6–12 months, 12–24 months and 24–45 months intervals.

Table 2 column 1, indicates that the average attrition rate during six months for cohort-based data is 14 percent with a standard deviation of 0.35. This average is the same for survival-type “attrite6” variable. The average attrition for cohort-based “attrite24” is 8.3 percent. Table 2 also shows that survival-type average for “attrite45” to be 37 percent, which is the highest, compared to the other dependent variables.

Cohort Based & Survival-Type		
Dependent Variables	**Mean**	**Std. Dev.**
attrite6 (during 6 months)	0.14041	0.347413
attrite12 (during 12 months)	0.054229	0.226469
attrite24 (during 24 months)	0.083257	0.276271
attrite45 (during 45 months)	0.095326	0.293666
attrite6 (survival-type)	0.14041	0.347413
attrite12 (survival-type)	0.194803	0.396049
attrite24 (survival-type)	0.278371	0.448198
attrite45 (survival-type)	0.373865	0.483829

Table 2. Dependent Variable Means

4. Explanatory Variables

One of the independent variables used in this analysis is state unemployment rates, which uses the civilian unemployment rate for states by year. In addition, demographic variables, such as Black, White, Asian, Native American, other race, education years, age, female, male, AFQT_score, pay grade dependents, no dependents, first enlistment with bonus, and first enlistment no bonus, which are also used to measure their effect on the Navy’s enlisted attrition. Dummy variables for 1999-2007 and dummy variables for states were used in the models to correct for any bias created by unobserved factors that vary over time or across state. The independent variables are described below.

a. Unemployment Rate

The Bureau of Labor Statistics is the data source for the unemployment rate. The independent variable is the state unemployment rate matched by year for the periods 1999-2007. This is a continuous variable that is based on an individual’s home state of residence at the time of entry into the Navy. The average state unemployment rate for this entire period was 5.34 percent and the range was 2–12 percent. The unemployment rate assumed to proxy the effect of local economic conditions on attrition.

Based on literature review it is hypothesized that a positive relationship exists between attrition and state unemployment rates.

b. “Race”

The “Race” variable identifies the effects of race on attrition. Race is defined in Table 3 in four categories: Black, Asian, Native American and Other Race. Blacks comprised approximately 22 percent of the sample, Asians constitute approximately 4 percent of the sample, Native Americans were approximately 6 percent of the sample, and other race made up nearly 7 percent of the sample size. In regards to other race, the individual is not Black, White, Asian or Native American. The data source for this variable is from the NEM. Prior to 2003, coding for Hispanic was not available; therefore, it is not analyzed as a separate category.

Variable Name	Variable Definition	Percentage
White	“0”=not white; “1”=white	0.616
Black	“0”=not black; “1”=black	0.224
Asian	“0”=not Asian; “1”=Asian	0.038
Native American	“0”=not native american; “1”=native american	0.057
Other Race	“0”=other race; “1”=other race	0.065
Total		100

Table 3. Percentage Distribution of Sample by Race

c. Education Years (educ_years)

This variable provides the highest level of education years completed prior to the sailor enlisting in the Navy. The average years of education for this sample are 11.95 years. Figure 1 shows that nearly 350,000 enlisted personnel in this sample have at least 12 years of education. This independent variable is used to measure the effect of years of education on attrition, which may provide insight into a sailor’s motivation, performance, and aptitude for advancement due to the number of completed years of education.

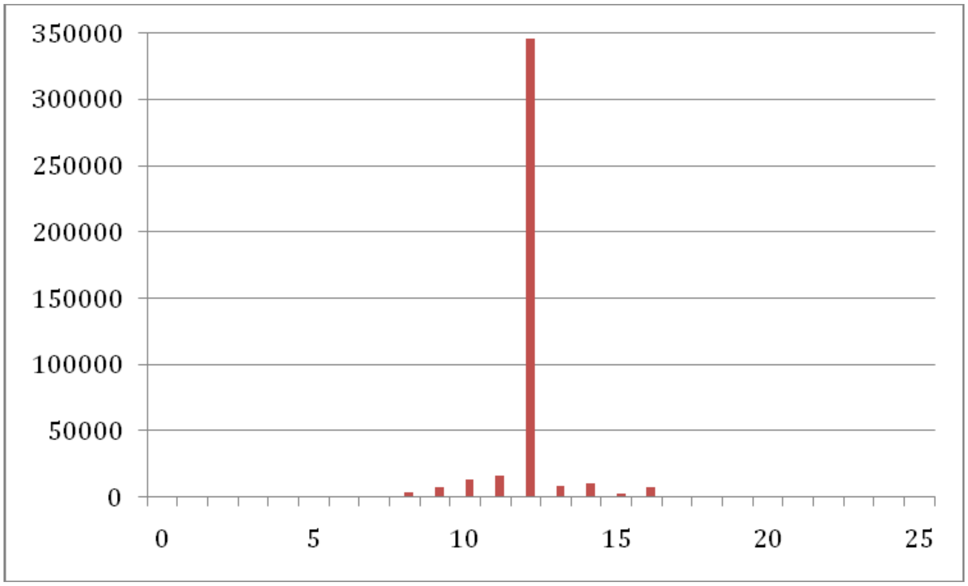

Figure 1. Years of Education for Sample Population

d. Age (age)

Age is a continuous variable based on date of entry into the Navy. The age for this samples ranges from 17 years old to 57 years old. The average age is approximately 21 years old. In Figure 2, most of the enlisted personnel in the Navy are about 19 years of age at entry.

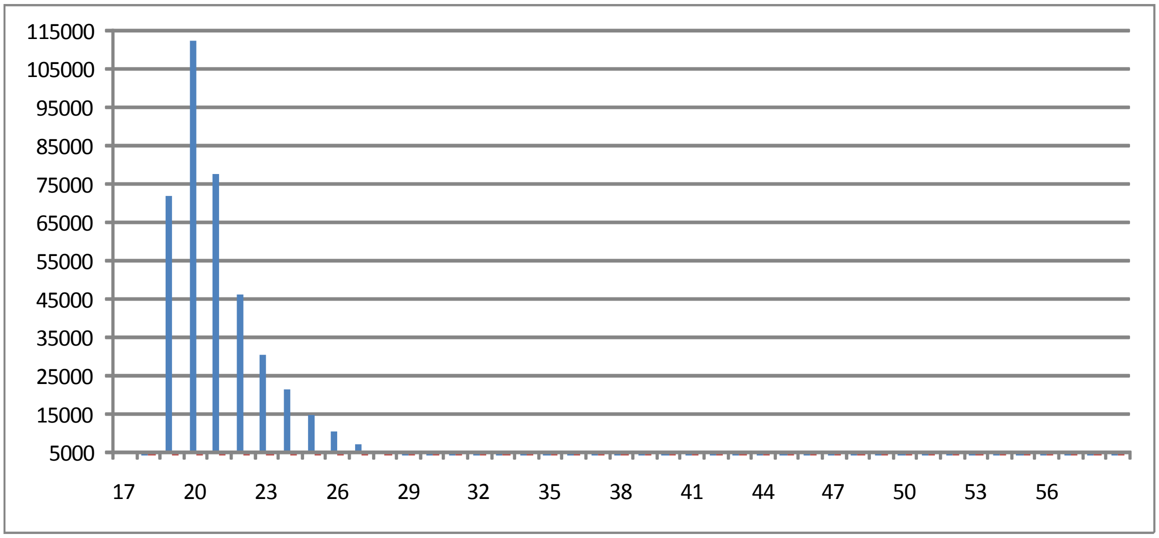

Figure 2. Age at Time of Entry into Navy

e. Pay Grade (pg)

The pay grade variable identifies the rank at which the individual enlisted in the Navy. The pay grades in this sample range from E-1 to E-9. In Figure 3, E-1s comprise 270,000 of the sample, which is approximately 66 percent. E-2s and E-3s constitute nearly 35 percent. Most individuals enter the Navy as an E-l but can enter either as an E-2 or higher based on experience, education and program entry at the time of contract.

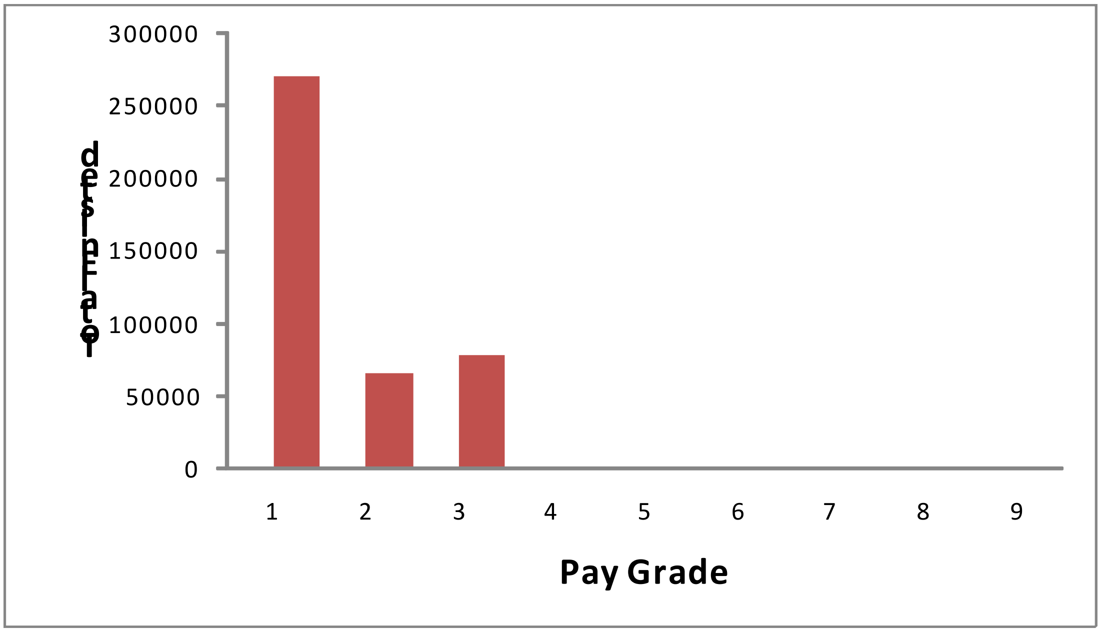

Figure 3. Pay Grade at Entry

f. Female (female)

The “female” variable equals “1” for a female and “0” for a male. This dummy variable was generated from the variable “gender.” Females account for 18.30 percent of the sample and males 81.70 percent.

g. AFQT Score (AFQT_score)

This independent variable measures an individual’s knowledge and aptitude. The Armed Forces Qualification Test (AFQT)scores range from 31 to 99 in this sample. However, scores 30 and below were dropped from this data set. Individuals with scores of less than 30 are considered ineligible to join the Navy. Scores above 50 percentile are considered to be “high quality” enlistees. According to Figure 4, over 13,000 enlisted personnel score at least 35 on their AFQT.

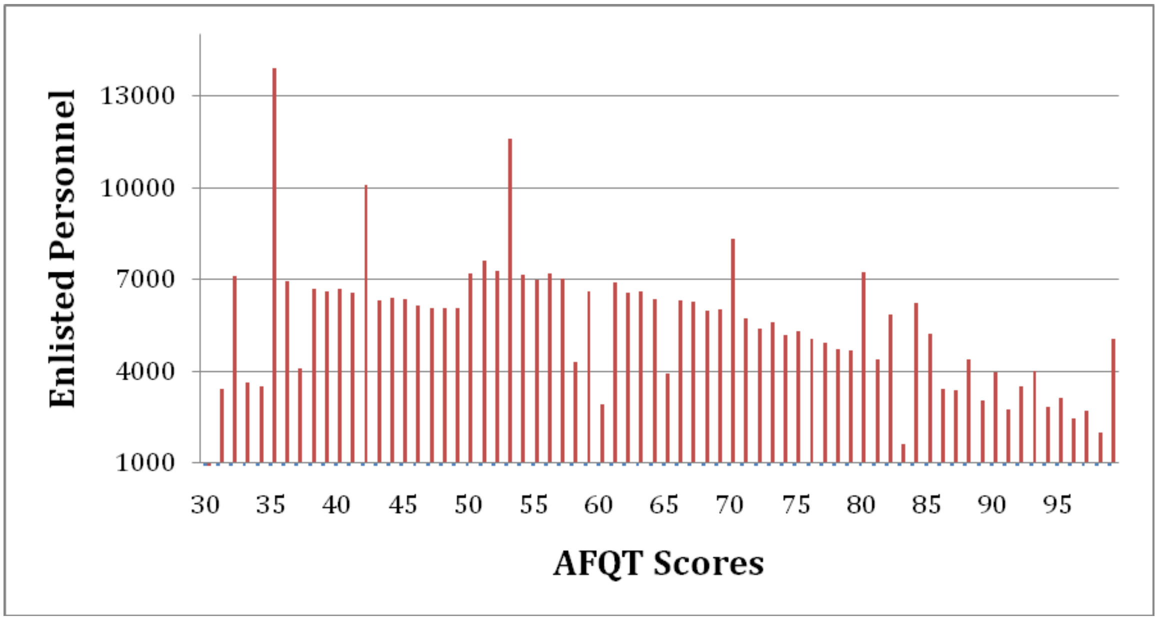

Figure 4. Average AFQT Scores for Population Sample

h. Dependents (DEPENDENTS)

“Dependents” is a dummy variable generated from the variable “marital status” that identifies whether the individual enlisted in the Navy without dependents or unmarried. “0”= dependents; “1”=dependents.

i. First Enlistment, No Bonus (First_Enl_NB)

First enlistment, no bonus is a dummy variable that identifies those individuals with no prior service who did not receive an enlistment bonus with their military service contract. This variable *“First_Enl_NB” = 1* for individuals who not receive a bonus and 0=for those who received a bonus. I expect a positive correlation between those individuals who did not receive bonus and attrition.

j. Yeardum (Yeardum)

Fiscal year dummies account for variations due to unobservables that may vary over time. These year dummies are created from the variable “event year.” Dummies for Y1999, Y2000, Y2001, Y2002, Y2003, Y2004, Y2005, Y2006, and Y2007 were created.

k. Statedum (statedum)

Statedum is a dummy variable generated from the “home of record” variable. Separate dummy variables were created for all 50 states.

IV. METHODOLOGY AND RESULTS

A. INTRODUCTION

This chapter discusses the methodology for estimating the attrition models. Cohort data is used for the two alternative methods of estimating attrition.

B. RESEARCH DESIGN

This study uses multivariate analysis to analyze attrition rates during the first six months, during the first 12 months, during the first 24 months and during the first 45 months of service. The attrition rate of enlisted personnel is also examined during several time intervals: between 6-12 months, between 12-24 months, and between 24-45 months of service. Further analysis is made to explore the difference in attrition rates amongst blacks versus whites. The analysis focuses on capturing the relationship between the state unemployment rate and attrition.

To limit the amount of bias that would be caused by leaving out unaccounted for year-specific factors, dummy variables were introduced for each fiscal year when the individual enlisted. These cohort dummy variables act as controls for unobserved differences that vary overtime.

The reference categories in the regressions are the same for all multivariate models. These reference categories include the following:

- White
- Enlistment: No Prior Service, No Bonus
- Year 2007
- Male
- State of California

C. THEORETICAL FRAMEWORK

1. Binary Response Model

A probit binary response model is used to explain a relationship between a group of explanatory variables and a discrete dependent variable. It ensures that all probabilities fall between zero and one. A Probit model estimates the probability of an event occurring, such as in this case of first-term attrition, given the independent attributes associated with each observation.

2. Probit Models

The probit model estimates the probability of attrition when one of the independent variables changes and all other independent variables are held constant. The dependent variable “attrite1” has a binary outcome of “0” or “1.” Either the individual attrited, “1,” or stayed in the Navy, “0.”

It is hypothesized that the independent variables of interest are associated with or have a causal relationship with the event. The outcome of the probit gives the level of significance of the association between the dependent variable and the independent attributes and the magnitude of that association. The resulting model predicts changes to the probability of attrition based on the specific explanatory variables introduced in the model.

3. Model Specification

Based on the influential factors identified in the literature review and the sample population, four models are specified. The model specified incorporates those factors from Chapter II that have been statistically significant in prior studies estimating the effects of attrition on first-term Navy enlisted personnel. The specification for the base model without the state dummies is as follows:

(ATTRITE) = ß0 + ß1 (Unemployment) + ß2(Black) + ß3(Asian) + ß4(Native) + ß5 (Other Race) +ß6(Education Years) ß7(Age) + ß8(Female) + ß9(AFQT Score) + ß10(Pay Grade) + ß11(No Dependents) + ß12 (First Enlistment No Prior Service, No Bonus) + ß13(Year 1999) + ß14(Year2000) + ß15(Year2001) + ß16(Year2002) + ß17 (Year2003) + ß18(Year2004) + ß19(Year2005) + ß20(Year2006) + ß21(Year2007) + ß22(Year2008) + ß23(Year2009) + ei

The dependent variables for each of the four separate models are attrite6, attrite12, attrite24 and attrite45.

Two model types were used in this analysis, a cohort-based model, and a second model for analyzing attrition over specific time intervals.

In constructing the methodology for this thesis, four separate probit models shown in Table 3 were specified to analyze the effect of the state unemployment rate on first-term attrition of several cohorts of Navy enlisted personnel during six months of service, 12 months of service, 24 months of service and 45 months of service. In addition, the effect of state unemployment rates on attrition with respect to the race demographic was also analyzed. Column 1 of Table 4 shows the cohort-based attrition models.

Dependent Variable	**Cohort Analysis**	**Months in Service**
Attrite6	during six months	during six months
Attrite12	during 12 months	6–12 months of service
Attrite24	during 24 months	12–24 months of service
Attrite45	during 45 months	24–45 months of service

Table 4. Alternative Model Specification: Attrition Periods

Column 2 of Table 4 shows the survival-type attrition models. These probit models analyzed attrition during six months, between 6-12 months of service, between 12–24 months of service and between 24–45 months of service. These models were developed to predict the likelihood that an enlisted sailor attrites during a given period in military service when state unemployment rates change.

Variables hypothesized to decrease the probability of attrition include decreases in the state unemployment rate, higher AFQT scores, additional years of education, and being Black. Alternatively, the following variables are predicted to increase probability of attrition: age and dependents, and being female.

D. RESULTS

This section describes the results of the eight types cohort-based and survival-type models. Full model results are presented in Appendix Tables A–H.

Table 5, column 1, summarizes the estimated coefficients of the state unemployment rate on attrition for the eight basic models that omit the state dummies from the specifications. Column 2 displays the marginal effects of a 1-percentage point change in the unemployment rate.

Unemployment Coefficients in Models without State Dummies				
Dependent Variables	**Probit**	**Standard Error**	**Marginal Effects**	**Standard Error**
Cohort Attrite6	-0.041	0.003	-0.009	0.001
Cohort Attrite12	-0.039	0.003	-0.010	0.001
Cohort Attrite24	-0.048	0.003	-0.016	0.001
Cohort Attrite45	-0.093	0.003	-0.035	0.001
6 months or less Attrite6	-0.041	0.003	-0.009	0.001
6-12 months Attrite12	-0.017	0.004	-0.002	0.000
12-24 months Attrite24	-0.045	0.004	-0.006	0.001
24-45 months Attrite45	-0.308	0.008	-0.042	0.001

***statistically significant at the 1 percent level

Table 5. Unemployment Coefficients in Models Without State Dummies

From these coefficients, it is possible to identify how state unemployment rates affect attrition at different points in time. Results using cohort data for attrition during the first six months, in Row 3, report that as state unemployment rates increase by 1 percentage point, attrition falls by 0.9 percentage points. Notice that the effect of state unemployment is cumulative in the cohort models in rows 3-6. Hence, cohort-based results for attrite45 indicate the largest effect of unemployment on attrition. As unemployment increases by 1 percentage point, 45-month attrition falls by 3.50 percentage points for enlisted personnel.

The next section discusses in more detail the full results of the eight estimated attrition models.

1. Cohort-Based Data Results

a. 6-Month Attrition Model

Appendix Table A provides the full results for the 6-month attrition model. All variables of interests were significant at the 1 percent level. As discussed above state unemployment rates have a negative effect on attrition. The predicted marginal effect indicates that as state unemployment rates increase by 1 percentage point, the 6-month (cohort-based) attrition probability decreases by 0.9 percentage points. In addition, Appendix Table A shows that age has a positive effect on attrition during the first six months of service. When age increases by one year, attrition rises by 0.50 percentage points. AFQT scores have a negative effect on attrition during the first six months of service. A one-point increase in AFQT score (on a scale of 0-100) for an individual decreases the probability of attrition by 0.07 percentage points. Thus, a 10-point increase in AFQT from a score of 50–60 would decrease 6-month attrition by about 1 percentage point. Blacks are less likely to attrite than whites by 3 percentage points. The likelihood of females attriting is 6 percentage points more than males in the first six months of service. Years of education had a negative effect on attrition. For each additional year of education at the time of enlistment, attrition falls 1.1 percentage points during the first six months of service.

b. 12-Month Attrition Model

Appendix Table B shows that state unemployment rates also have a negative effect in 12-month attrition. As state unemployment rates increase by 1 percentage point, the likelihood of attrition during the first 12 months of service falls by 1 percentage point. AFQT scores have a negative effect on attrition during the first 12 months of service. A one-point increase in an individual’s AFQT score decreases the probability of attrition by 0.07 percentage points. Attrition decreases by 1.6 percentage points for each additional year of education, which is a larger effect than in 6-month attrition. Age has a positive effect on attrition during the first 12 months of service. One more year in age at enlistment increases attrition by 0.43 percentage points. Blacks are less likely to attrite than whites by 4.4 percentage points. The likelihood of females attriting is 6.7 percentage points more than males during their first 12 months of service.

c. 24-Month Attrition Model

Appendix Table C indicates that age has a positive effect on attrition during the first 12 months of service. Each additional year of age at enlistment causes attrition to increase by 0.4 percentage points during the first 24 months of service, a somewhat smaller effect than in 12-month attrition. Attrition during the first 24 months of service falls by 1.6 percentage points when state unemployment rises by 1 percentage point. This effect of state unemployment is much larger in 24-month attrition than it was in 6- and 12-month attrition. An increase in AFQT scores reduces attrition by 0.1 percentage point. Blacks are less likely to attrite than whites by 4.6 percentage points, a somewhat larger effect than on 12-month attrition. The likelihood of females attriting is 6.0 percentage points more than males during the first 24 months of service, about the same effect as during the first six months of service. One more year of education reduces attrition by 2.7 percentages during the first 12 months of service. This effect is much larger in 24-month attrition than in 6- and 12-month attrition. The overall goodness of fit, pseudo R-squared value is 0.057.

d. 45-Month Attrition Model

In Appendix Table D, the probability of an enlisted individual attriting in the first 45 months of service is 3.5 percentage points lower when state unemployment increases by 1 percentage point. This represents the largest effect on attrition of the unemployment rate. A one-point increase in AFQT score for an individual decreases the probability of attrition by 0.14 percentage points during the first 45 months of service. Blacks are less likely to attrite than whites by 4.3 percentage points during the first 45 months of service. During the first 45 months of service females have a positive effect on attrition. Females attrite by 6.3 percentage points more than males. This effect is smaller in the 45-month attrition than in the 12-month attrition model. One more year of education decreases attrition by

3.7 percentage points during 45 months of service. This effect is largest in 45-month attrition than on 6-, 12-, or 24-month attrition. Age positively effects attrition in the first 45 months of service. Each additional year in age causes attrition to rise by 0.3 percentage points. This effect is smaller in 45-month attrition than on 6-, 12- and 24-month attrition.

2. Attrition Over Specific Time Intervals

This analysis is used to evaluate attrition for Navy enlisted personnel within a specific time interval. It also uses the basic cohort data on new entrants.

a. 6-Month Attrition Model (During Six Months)

This model and its results are the same as the 6-month (cohort-based) attrition model for those individuals who attrite during their first six months of service as shown in Appendix Tables A and E.

b. 12-Month Attrition Model (6–12 Months of Service)

In Appendix Table F, the likelihood of an enlistee attriting between 6–12 months of service falls by 0.17 percentage points when state unemployment increases by 1 percentage point. Blacks are less likely to attrite between 6-12 months of service by 1.3 percentage points more than whites. One additional year in age between 6-12 months of service, deceases attrition by 0.05 percentage points during this period. Being female has a positive impact on attrition. Females are more likely to attrite than males by 0.6 percentage points. Appendix Table F also indicates that AFQT scores do not affect attrition between

6-12 months of service. One more year of education decreases attrition by 0.5 percentage points during this period. The overall goodness of fit, pseudo R-squared value is 0.026.

c. 24-Month Attrition Model (12–24 Months of Service)

According to Table G in the Appendix, the probability of an enlistee attriting between 12–24 months of service, falls by 0.64 percentage points for each 1 percentage point increase in the state unemployment rate. An additional year in age decreases attrition between 12-24 months by 0.10 percentage points, a larger effect than on attrition between 6-12 months of service. Females are less likely to attrite than males by 0.80 percentage points. An increase in AFQT score by 1 point reduces attrition by 0.03 percentage points. Blacks are less likely to attrite by 0.01 percentage points between 12-24 months of service than whites. Each additional year in education causes attrition between 12-24 months to fall by 1 percentage point. This effect is larger on the attrition between 12-24 months of service than on attrition between 6-12 months of service.

d. 45-Month Attrition Model (24–45 Months of Service)

The data in Table H of Appendix show that state unemployment rates and age have a negative effect on attrition during 24–45 months of service. The probability of an enlisted individual attriting between 24–45 months of service decreases by 4.2 percentage points when unemployment increases by 1 percentage point. Each additional year in age causes attrition between 24-45 months of service to drop by 0.09 percentage points. This effect is slightly smaller than the effect on attrition between 12-24 months of service. Attrition falls by 0.03 percentage points when an AFQT score increases by one point. Females attrite more than males by 0.12 percentage points. Blacks attrite more than whites by 0.50 percentage points. An additional year of education decreases attrition by 0.6 percentage points. The overall goodness of fit, pseudo R-squared value is 0.065.

E. SUMMARY

The primary focus of this study was to analyze the effect of state unemployment rates on first-term attrition for Navy enlisted personnel. The SAG and SERCO Corporations and the Bureau of Labor Statistics collected the data used in the study. The data were restricted to non-prior service, first-term enlisted, and non-reservists who entered Navy active duty during fiscal years 1999–2007.

A cohort-based and specific time interval models used independent variables of interest such as unemployment rate, black, age, female and AFQT score for analyzing the characteristics related to attrition.The cohort-based model analyzed enlisted attrition during six months of service, during 12 months of service, during 24 months of service and during 45 months of service. The same dependent variables were used for the specific time interval model. However, this analysis examined enlisted attrition during six months of service, between 6–12 months of service, between 12–24 months of service, and between 24–45 months of service.

Age had a positive effect on attrition during six, 12, 24 and 45 months for cohort-based data. Attrition for an additional year in age for the cohort-based data ranged from 0.30 to 0.50 percentage points.

Age had a negative effect on attrition occurring between 6-12 months, between 12-24 months, and between 24-45 months. Attrition for an additional year in age for survival-type data ranged between 0.05 to 0.10 percentage points.

The overall impact of this the relationship between age and attrition is significant for both cohort-based data and survival-type data. The results using cohort-based data are consistent with the research findings by Hodari & Wagner (2004) which found that enlistees who enlisted before turning 18 years of age were most likely to attrite than any other age group (Hodari & Wenger).

As predicted, the effect of the Armed Forces Qualification Test (AFQT) is a significant predictor of attrition. It does not appear to be an important predictor of attrition between 6-12 months of service with zero percentage points.

The variable for Blacks demonstrates that it is a significant predictor of attrition in the race category. Blacks had a negative effect on the cohort-based data. Although it mostly had a negative effect for attrition occurring over at specific time interval, the variable changed had a positive effect on attrition for the time interval between 24-45 months of service.

Findings in this thesis suggest that the more educated an enlisted individual is at the time of entry into the Navy, the less likely that he or she will attrite. Years of education had a negative effect in both the cohort-based and survival-type models. In the literature review, Hodari & Wegner (2004) analyzed non-cognitive factors that effected attrition. It was found that enlisted personnel who did not possess a high school diploma attrited at a rate 42.1 percent higher than those who possessed a high school diploma (Hodari & Wegner, 2004). Another study found that recruits who possessed a bachelor degree at the time of enlistment attrited the least compared to those with GEDs or high school degrees (Eshwar, et al., 2008).

Being female had a positive effect on attrition for the cohort-based data. Being female also had a positive effect on attrition over specific time interval with the exception of the 12-24 month attrition model. Being female had a negative effect of attrition by 0.08 percentage points. This effect may be due to physiological differences, such as childbirth that may interrupt the career path at this particular time interval.

State unemployment rates appear to be a significant predictor of attrition for all eight models. The results are consistent with studies conducted by Cox (2003). The study reported that the decrease in the unemployment rate in fiscal years 1993–1997 specifically affected the attrition of the Navy enlisted personnel in the nuclear ratings. Attrition rose from 19 percent in fiscal year 1993 to 27 percent in fiscal year 1997 as unemployment rose. The results are comparable to the results of this thesis, which suggest that as unemployment increases, navy enlisted personnel are less likely to leave the Navy (Cox, 2003).

Another study reported that individuals who enlisted into the Navy in states with high unemployment rates are less likely to attrite than those who enlisted from states with low unemployment rate (Ackerman et al., 2003). The findings in this thesis are on par with prior studies that found that there is a significant relationship between attrition and state unemployment rates.

V. CONCLUSION

A. RESULTS

The primary focus of this thesis was to analyze the effect of state unemployment rates on first-term attrition for Navy enlisted personnel and how the effects of attrition differs across demographics, such as by race, gender, and age.

The results suggest that state unemployment rates do significantly influence the attrition of Navy enlisted personnel. Analysis concluded that increases in state unemployment rates for the sailor’s home state reduced the likelihood that the person attrited. Years of education also had a negative effect on attrition. Results showed a decline in attrition for each additional year of education. Also, the analysis finds that blacks are less likely to attrite than whites and women are more likely to attrite than men. The times at which attrition occurs can be of importance in developing recruiting programs, whereas merely obtaining an estimate of a time interval provides very little information on the patterns of attrition.

The results are consistent with research studies concerning attrition and education, attrition and recruit training, and attrition and unemployment. Most attrition occurs during the first six months of the contract during basic training and advanced school training. Moreover, increasing state unemployment rates cause attrition to fall. The results for cohort analysis are consistent and comparable to those of the model for specific time intervals.

B. RECOMMENDATION

Further research is recommended in analyzing how state unemployment rates affect attrition on first-term Navy enlisted personnel by examining Navy enlisted ratings to determine which Navy occupations are most affected by changes in state unemployment rates. In addition, further study should be conducted to analyze the effects unemployment rates have on first-term attrition for Navy enlisted to include demographics such as Hispanics.

Additionally, analysis should also be expanded to examine reasons or loss codes for attrition when state unemployment rates change to determine if a trend occurs amongst certain loss codes or causes for attrition amongst technical versus non-technical enlisted ratings.

APPENDIX.

Appendix Table A: Models using Cohort Data
Dependent Variable: Attrite6 (during six months of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite6	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0420***	-0.00873***	-0.0413***	-0.00861***
	(0.00304)	(0.000631)	(0.00302)	(0.000629)
black	-0.151***	-0.0298***	-0.148***	-0.0294***
	(0.00834)	(0.00156)	(0.00795)	(0.00150)
asian	-0.205***	-0.0381***	-0.300***	-0.0530***
	(0.0180)	(0.00297)	(0.0171)	(0.00250)
native	0.00300	0.000624	0.00253	0.000529
	(0.0127)	(0.00264)	(0.0124)	(0.00260)
other_race	-0.0762***	-0.0153***	-0.101***	-0.0200***
	(0.0121)	(0.00234)	(0.0118)	(0.00222)
educ_years	-0.0512***	-0.0107***	-0.0494***	-0.0103***
	(0.00326)	(0.000678)	(0.00322)	(0.000670)
age	0.0219***	0.00456***	0.0212***	0.00442***
	(0.00110)	(0.000228)	(0.00108)	(0.000225)
female	0.263***	0.0599***	0.259***	0.0591***
	(0.00748)	(0.00185)	(0.00742)	(0.00183)
afqt_score	-0.00353***	-0.000734***	-0.00354***	-0.000737***
	(0.000185)	(3.85e-05)	(0.000183)	(3.81e-05)
pg	-0.101***	-0.0209***	-0.0987***	-0.0206***
	(0.00443)	(0.000919)	(0.00437)	(0.000909)
NO_DEPENDENTS	0.146***	0.0282***	0.145***	0.0279***
	(0.0157)	(0.00279)	(0.0156)	(0.00277)
First_Enl_NPS_NB	0.0355***	0.00748***	0.0315***	0.00663***
	(0.0101)	(0.00216)	(0.0101)	(0.00215)
Y1999	0.502***	0.130***	0.508***	0.131***
	(0.0128)	(0.00390)	(0.0127)	(0.00389)
Y2000	0.402***	0.0995***	0.407***	0.101***
	(0.0130)	(0.00372)	(0.0129)	(0.00370)
Y2001	0.347***	0.0845***	0.350***	0.0854***
	(0.0135)	(0.00376)	(0.0134)	(0.00374)
Y2002	0.191***	0.0433***	0.190***	0.0433***
	(0.0130)	(0.00320)	(0.0129)	(0.00318)
Y2003	-0.00675	-0.00140	-0.00812	-0.00168
	(0.0140)	(0.00290)	(0.0139)	(0.00288)
Y2004	0.0887***	0.0193***	0.0892***	0.0194***
	(0.0148)	(0.00336)	(0.0147)	(0.00334)
Y2005	0.0975***	0.0212***	0.0930***	0.0202***
	(0.0135)	(0.00307)	(0.0134)	(0.00304)
Y2006	0.00858	0.00179	0.0101	0.00211
	(0.0128)	(0.00269)	(0.0127)	(0.00266)
Alabama	0.190***	0.0438***		
	(0.0234)	(0.00591)		
Alaska	-0.0394	-0.00801		
	(0.0599)	(0.0119)		

Cohort Analysis Attrite6	Probit Regression w/State Dummies	Marginal Effects w/State Dummies	Probit Regression without State Dummies	Marginal Effects without State Dummies
Arkansas	0.108***	0.0238***		
	(0.0227)	(0.00529)		
Arizona	0.285***	0.0688***		
	(0.0298)	(0.00818)		
Colorado	0.127***	0.0282***		
	(0.0248)	(0.00588)		
Connecticut	0.206***	0.0478***		
	(0.0397)	(0.0102)		
Delaware	0.188***	0.0434***		
	(0.0632)	(0.0160)		
District_of_Columbia	0.152*	0.0344		
	(0.0891)	(0.0218)		
Florida	0.0812***	0.0176***		
	(0.0148)	(0.00332)		
Georgia	0.0924***	0.0202***		
	(0.0186)	(0.00425)		
Hawaii	-0.106**	-0.0207**		
	(0.0538)	(0.00988)		
Idaho	0.0465	0.00993		
	(0.0410)	(0.00899)		
Illinois	0.179***	0.0409***		
	(0.0178)	(0.00440)		
Indiana	0.239***	0.0562***		
	(0.0228)	(0.00600)		
Iowa	0.211***	0.0492***		
	(0.0356)	(0.00920)		
Kansas	0.172***	0.0392***		
	(0.0329)	(0.00819)		
Kentucky	0.246***	0.0583***		
	(0.0276)	(0.00733)		
Louisiana	0.254***	0.0603***		
	(0.0225)	(0.00601)		
Maine	0.0633	0.0136		
	(0.0477)	(0.0106)		
Maryland	0.148***	0.0333***		
	(0.0235)	(0.00570)		
Massachusetts	0.136***	0.0305***		
	(0.0325)	(0.00780)		
Michigan	0.157***	0.0355***		
	(0.0195)	(0.00474)		
Minnesota	0.187***	0.0429***		
	(0.0294)	(0.00741)		
Mississippi	0.251***	0.0597***		
	(0.0287)	(0.00767)		
Missouri	0.223***	0.0520***		
	(0.0221)	(0.00572)		
Montana	0.107**	0.0236**		
	(0.0440)	(0.0103)		
Nebraska	0.192***	0.0443***		
	(0.0393)	(0.00996)		

Cohort Analysis Attrite6	Probit Regression w/State Dummies	Marginal Effects w/State Dummies	Probit Regression without State Dummies	Marginal Effects without State Dummies
Nevada	0.0754**	0.0163**		
	(0.0322)	(0.00726)		
New_Hampshire	0.140**	0.0314**		
	(0.0547)	(0.0132)		
New_Jersey	0.128***	0.0284***		
	(0.0224)	(0.00532)		
New_Mexico	0.115***	0.0254***		
	(0.0363)	(0.00853)		
New_York	0.0881***	0.0192***		
	(0.0165)	(0.00374)		
North_Carolina	0.134***	0.0298***		
	(0.0196)	(0.00467)		
North_Dakota	-0.113	-0.0220		
	(0.0918)	(0.0167)		
Ohio	0.205***	0.0473***		
	(0.0179)	(0.00453)		
Oklahoma	0.281***	0.0677***		
	(0.0248)	(0.00679)		
Oregon	0.0770***	0.0167***		
	(0.0272)	(0.00616)		
Pennsylvania	0.158***	0.0355***		
	(0.0186)	(0.00451)		
Rhode_Island	0.216***	0.0505***		
	(0.0653)	(0.0170)		
South_Carolina	0.175***	0.0400***		
	(0.0245)	(0.00608)		
South_Dakota	0.222***	0.0521***		
	(0.0599)	(0.0157)		
Tennessee	0.208***	0.0484***		
	(0.0227)	(0.00581)		
Texas	0.142***	0.0314***		
	(0.0130)	(0.00305)		
Utah	0.206***	0.0478***		
	(0.0417)	(0.0107)		
Vermont	0.0649	0.0140		
	(0.0881)	(0.0197)		
Virginia	0.0583***	0.0125***		
	(0.0206)	(0.00456)		
Washington	0.0319	0.00674		
	(0.0230)	(0.00495)		
West_Virginia	0.173***	0.0397***		
	(0.0401)	(0.0100)		
Wisconsin	0.183***	0.0421***		
	(0.0274)	(0.00688)		
Wyoming	0.0140	0.00294		
	(0.0660)	(0.0139)		
Constant	-0.794***		-0.672***	
	(0.0503)		(0.0490)	
Observations	283,022	283,022	286,482	286,482

Appendix Table B: Models using Cohort Data
Dependent Variable: Attrite12 (during twelve months of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite12	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0396***	-0.0104***	-0.0390***	-0.0102***
	(0.00278)	(0.000726)	(0.00277)	(0.000722)
black	-0.178***	-0.0443***	-0.171***	-0.0427***
	(0.00771)	(0.00182)	(0.00735)	(0.00174)
asian	-0.251***	-0.0585***	-0.351***	-0.0781***
	(0.0167)	(0.00343)	(0.0158)	(0.00291)
native	0.00947	0.00248	0.00872	0.00229
	(0.0116)	(0.00306)	(0.0114)	(0.00301)
other_race	-0.0865***	-0.0218***	-0.111***	-0.0277***
	(0.0111)	(0.00271)	(0.0108)	(0.00258)
educ_years	-0.0610***	-0.0159***	-0.0593***	-0.0155***
	(0.00302)	(0.000789)	(0.00298)	(0.000779)
age	0.0164***	0.00428***	0.0158***	0.00413***
	(0.00103)	(0.000268)	(0.00101)	(0.000264)
female	0.239***	0.0668***	0.235***	0.0656***
	(0.00702)	(0.00208)	(0.00696)	(0.00206)
afqt_score	-0.00257***	-0.000672***	-0.00257***	-0.000671***
	(0.000171)	(4.46e-05)	(0.000169)	(4.41e-05)
pg	-0.120***	-0.0314***	-0.119***	-0.0311***
	(0.00407)	(0.00106)	(0.00402)	(0.00105)
NO_DEPENDENTS	0.123***	0.0304***	0.122***	0.0302***
	(0.0144)	(0.00338)	(0.0142)	(0.00334)
First_Enl_NPS_NB	0.0175*	0.00460*	0.0137	0.00359
	(0.00935)	(0.00247)	(0.00930)	(0.00245)
Y1999	0.561***	0.175***	0.565***	0.177***
	(0.0120)	(0.00426)	(0.0119)	(0.00424)
Y2000	0.476***	0.145***	0.480***	0.147***
	(0.0121)	(0.00416)	(0.0120)	(0.00414)
Y2001	0.419***	0.127***	0.422***	0.128***
	(0.0125)	(0.00425)	(0.0124)	(0.00422)
Y2002	0.257***	0.0735***	0.256***	0.0734***
	(0.0119)	(0.00369)	(0.0118)	(0.00367)
Y2003	0.0759***	0.0204***	0.0752***	0.0202***
	(0.0125)	(0.00347)	(0.0125)	(0.00344)
Y2004	0.166***	0.0461***	0.166***	0.0463***
	(0.0134)	(0.00396)	(0.0133)	(0.00393)
Y2005	0.136***	0.0375***	0.132***	0.0363***
	(0.0123)	(0.00356)	(0.0123)	(0.00352)
Y2006	0.0401***	0.0106***	0.0412***	0.0109***
	(0.0117)	(0.00316)	(0.0116)	(0.00313)
Alabama	0.215***	0.0614***		
	(0.0216)	(0.00667)		
Alaska	0.00779	0.00204		
	(0.0534)	(0.0140)		
Arkansas	0.0805***	0.0218***		
	(0.0211)	(0.00589)		

Cohort Analysis Attrite12	Probit Regression w/State Dummies	Marginal Effects w/State Dummies	Probit Regression without State Dummies	Marginal Effects without State Dummies
Arizona	0.283***	0.0830***		
	(0.0278)	(0.00901)		
Colorado	0.110***	0.0302***		
	(0.0229)	(0.00655)		
Connecticut	0.162***	0.0454***		
	(0.0372)	(0.0111)		
Delaware	0.156***	0.0437**		
	(0.0592)	(0.0176)		
District_of_Columbia	0.199**	0.0567**		
	(0.0821)	(0.0252)		
Florida	0.0741***	0.0199***		
	(0.0136)	(0.00375)		
Georgia	0.0872***	0.0236***		
	(0.0171)	(0.00480)		
Hawaii	-0.116**	-0.0286**		
	(0.0491)	(0.0115)		
Idaho	0.0418	0.0111		
	(0.0375)	(0.0102)		
Illinois	0.219***	0.0623***		
	(0.0163)	(0.00501)		
Indiana	0.243***	0.0701***		
	(0.0211)	(0.00665)		
Iowa	0.190***	0.0539***		
	(0.0332)	(0.0101)		
Kansas	0.152***	0.0425***		
	(0.0305)	(0.00905)		
Kentucky	0.239***	0.0689***		
	(0.0257)	(0.00810)		
Louisiana	0.276***	0.0806***		
	(0.0209)	(0.00673)		
Maine	0.0282	0.00748		
	(0.0441)	(0.0118)		
Maryland	0.162***	0.0454***		
	(0.0216)	(0.00644)		
Massachusetts	0.176***	0.0496***		
	(0.0295)	(0.00892)		
Michigan	0.147***	0.0408***		
	(0.0180)	(0.00529)		
Minnesota	0.165***	0.0462***		
	(0.0273)	(0.00816)		
Mississippi	0.247***	0.0715***		
	(0.0268)	(0.00850)		
Missouri	0.228***	0.0655***		
	(0.0204)	(0.00637)		
Montana	0.0815**	0.0221*		
	(0.0407)	(0.0114)		
Nebraska	0.178***	0.0501***		
	(0.0364)	(0.0110)		
Nevada	0.0546*	0.0146*		
	(0.0297)	(0.00814)		

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite12	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
New_Hampshire	0.122**	0.0336**		
	(0.0504)	(0.0146)		
New_Jersey	0.140***	0.0388***		
	(0.0206)	(0.00603)		
New_Mexico	0.0957***	0.0261***		
	(0.0336)	(0.00955)		
New_York	0.0831***	0.0225***		
	(0.0151)	(0.00423)		
North_Carolina	0.147***	0.0407***		
	(0.0180)	(0.00528)		
North_Dakota	-0.0642	-0.0163		
	(0.0806)	(0.0198)		
Ohio	0.193***	0.0546***		
	(0.0165)	(0.00501)		
Oklahoma	0.281***	0.0822***		
	(0.0232)	(0.00749)		
Oregon	0.102***	0.0280***		
	(0.0248)	(0.00705)		
Pennsylvania	0.157***	0.0438***		
	(0.0171)	(0.00506)		
Rhode_Island	0.219***	0.0629***		
	(0.0606)	(0.0189)		
South_Carolina	0.168***	0.0471***		
	(0.0227)	(0.00678)		
South_Dakota	0.190***	0.0540***		
	(0.0561)	(0.0172)		
Tennessee	0.209***	0.0596***		
	(0.0210)	(0.00645)		
Texas	0.153***	0.0421***		
	(0.0119)	(0.00345)		
Utah	0.185***	0.0523***		
	(0.0389)	(0.0118)		
Vermont	0.0346	0.00919		
	(0.0816)	(0.0220)		
Virginia	0.0507***	0.0135***		
	(0.0189)	(0.00516)		
Washington	-0.0111	-0.00289		
	(0.0212)	(0.00549)		
West_Virginia	0.195***	0.0554***		
	(0.0370)	(0.0113)		
Wisconsin	0.178***	0.0501***		
	(0.0253)	(0.00763)		
Wyoming	0.0191	0.00503		
	(0.0600)	(0.0160)		
Constant	-0.384***		-0.264***	
	(0.0465)		(0.0453)	
Observations	283,022	283,022	286,482	286,482

Appendix Table C: Models using Cohort Data
Dependent Variable: Attrite24 (during 24 months of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite24	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0486***	-0.0158***	-0.0480***	-0.0156***
	(0.00259)	(0.000840)	(0.00258)	(0.000835)
black	-0.147***	-0.0463***	-0.139***	-0.0439***
	(0.00710)	(0.00217)	(0.00676)	(0.00207)
asian	-0.311***	-0.0909***	-0.407***	-0.115***
	(0.0154)	(0.00399)	(0.0146)	(0.00346)
native	0.0246**	0.00803**	0.0234**	0.00763**
	(0.0108)	(0.00355)	(0.0106)	(0.00349)
other_race	-0.0944***	-0.0298***	-0.119***	-0.0372***
	(0.0103)	(0.00316)	(0.00998)	(0.00302)
educ_years	-0.0838***	-0.0272***	-0.0819***	-0.0266***
	(0.00284)	(0.000921)	(0.00280)	(0.000909)
age	0.0111***	0.00359***	0.0104***	0.00338***
	(0.000963)	(0.000312)	(0.000949)	(0.000308)
female	0.176***	0.0592***	0.172***	0.0578***
	(0.00664)	(0.00230)	(0.00659)	(0.00228)
afqt_score	-0.00318***	-0.00103***	-0.00316***	-0.00102***
	(0.000158)	(5.14e-05)	(0.000156)	(5.07e-05)
pg	-0.123***	-0.0399***	-0.122***	-0.0395***
	(0.00373)	(0.00121)	(0.00369)	(0.00119)
NO_DEPENDENTS	0.0988***	0.0311***	0.0975***	0.0307***
	(0.0132)	(0.00403)	(0.0130)	(0.00398)
First_Enl_NPS_NB	0.00815	0.00265	0.00462	0.00150
	(0.00868)	(0.00283)	(0.00863)	(0.00280)
Y1999	0.630***	0.230***	0.633***	0.232***
	(0.0113)	(0.00442)	(0.0112)	(0.00439)
Y2000	0.558***	0.202***	0.560***	0.203***
	(0.0114)	(0.00441)	(0.0113)	(0.00438)
Y2001	0.508***	0.183***	0.511***	0.184***
	(0.0118)	(0.00456)	(0.0117)	(0.00452)
Y2002	0.338***	0.119***	0.338***	0.118***
	(0.0110)	(0.00411)	(0.0109)	(0.00407)
Y2003	0.268***	0.0928***	0.268***	0.0927***
	(0.0112)	(0.00409)	(0.0111)	(0.00406)
Y2004	0.300***	0.105***	0.299***	0.104***
	(0.0122)	(0.00452)	(0.0121)	(0.00448)
Y2005	0.235***	0.0809***	0.231***	0.0792***
	(0.0113)	(0.00408)	(0.0112)	(0.00404)
Y2006	0.106***	0.0353***	0.107***	0.0355***
	(0.0108)	(0.00368)	(0.0107)	(0.00364)
Alabama	0.206***	0.0707***		
	(0.0201)	(0.00725)		
Alaska	0.0921*	0.0308*		
	(0.0481)	(0.0165)		
Arkansas	0.0434**	0.0143**		
	(0.0197)	(0.00655)		
Arizona	0.259***	0.0904***		
	(0.0263)	(0.00972)		

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite24	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
Colorado	0.0779***	0.0259***		
	(0.0213)	(0.00724)		
Connecticut	0.134***	0.0452***		
	(0.0349)	(0.0122)		
Delaware	0.124**	0.0419**		
	(0.0554)	(0.0193)		
District_of_Columbia	0.184**	0.0631**		
	(0.0766)	(0.0275)		
Florida	0.0610***	0.0201***		
	(0.0125)	(0.00418)		
Georgia	0.0652***	0.0216***		
	(0.0157)	(0.00530)		
Hawaii	-0.138***	-0.0426***		
	(0.0447)	(0.0132)		
Idaho	-0.0161	-0.00521		
	(0.0350)	(0.0112)		
Illinois	0.229***	0.0789***		
	(0.0151)	(0.00549)		
Indiana	0.214***	0.0737***		
	(0.0198)	(0.00719)		
Iowa	0.172***	0.0587***		
	(0.0311)	(0.0111)		
Kansas	0.129***	0.0434***		
	(0.0285)	(0.00995)		
Kentucky	0.261***	0.0910***		
	(0.0241)	(0.00891)		
Louisiana	0.250***	0.0870***		
	(0.0197)	(0.00723)		
Maine	0.0666*	0.0221		
	(0.0402)	(0.0136)		
Maryland	0.177***	0.0603***		
	(0.0200)	(0.00712)		
Massachusetts	0.179***	0.0611***		
	(0.0275)	(0.00983)		
Michigan	0.120***	0.0404***		
	(0.0168)	(0.00581)		
Minnesota	0.129***	0.0435***		
	(0.0256)	(0.00894)		
Mississippi	0.239***	0.0830***		
	(0.0251)	(0.00922)		
Missouri	0.227***	0.0783***		
	(0.0191)	(0.00696)		
Montana	0.0591	0.0195		
	(0.0379)	(0.0127)		
Nebraska	0.158***	0.0537***		
	(0.0340)	(0.0121)		
Nevada	0.0396	0.0130		
	(0.0274)	(0.00912)		
New_Hampshire	0.0944**	0.0316*		
	(0.0469)	(0.0161)		

	Probit	Marginal	Probit	Marginal
Cohort Analysis Attrite24	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
New_Jersey	0.121***	0.0408***		
	(0.0191)	(0.00664)		
New_Mexico	0.0483	0.0159		
	(0.0316)	(0.0106)		
New_York	0.0596***	0.0197***		
	(0.0140)	(0.00470)		
North_Carolina	0.143***	0.0485***		
	(0.0166)	(0.00581)		
North_Dakota	-0.0514	-0.0164		
	(0.0731)	(0.0229)		
Ohio	0.177***	0.0602***		
	(0.0154)	(0.00548)		
Oklahoma	0.272***	0.0950***		
	(0.0219)	(0.00813)		
Oregon	0.0804***	0.0267***		
	(0.0230)	(0.00783)		
Pennsylvania	0.150***	0.0509***		
	(0.0159)	(0.00559)		
Rhode_Island	0.185***	0.0632***		
	(0.0571)	(0.0205)		
South_Carolina	0.119***	0.0400***		
	(0.0211)	(0.00733)		
South_Dakota	0.142***	0.0482***		
	(0.0531)	(0.0187)		
Tennessee	0.192***	0.0659***		
	(0.0195)	(0.00701)		
Texas	0.149***	0.0500***		
	(0.0110)	(0.00382)		
Utah	0.151***	0.0512***		
	(0.0366)	(0.0129)		
Vermont	-0.00949	-0.00307		
	(0.0761)	(0.0246)		
Virginia	0.0427**	0.0140**		
	(0.0173)	(0.00577)		
Washington	-0.0340*	-0.0109*		
	(0.0195)	(0.00620)		
West_Virginia	0.191***	0.0657***		
	(0.0347)	(0.0125)		
Wisconsin	0.143***	0.0485***		
	(0.0237)	(0.00833)		
Wyoming	0.0546	0.0180		
	(0.0548)	(0.0184)		
Constant	0.348***		0.451***	
	(0.0434)		(0.0423)	
Observations	283,022	283,022	286,482	286,482

Appendix Table D: Models using Cohort Data
Dependent Variable: Attrite45 (during 45 months of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite45	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0941***	-0.0350***	-0.0934***	-0.0347***
	(0.00255)	(0.000947)	(0.00254)	(0.000941)
black	-0.116***	-0.0427***	-0.108***	-0.0396***
	(0.00682)	(0.00246)	(0.00649)	(0.00235)
asian	-0.365***	-0.125***	-0.463***	-0.154***
	(0.0146)	(0.00450)	(0.0138)	(0.00396)
native	0.0461***	0.0172***	0.0469***	0.0175***
	(0.0104)	(0.00393)	(0.0103)	(0.00386)
other_race	-0.108***	-0.0393***	-0.133***	-0.0483***
	(0.00990)	(0.00354)	(0.00960)	(0.00339)
educ_years	-0.0987***	-0.0367***	-0.0972***	-0.0361***
	(0.00277)	(0.00103)	(0.00273)	(0.00101)
age	0.00807***	0.00300***	0.00735***	0.00273***
	(0.000930)	(0.000346)	(0.000917)	(0.000341)
female	0.166***	0.0626***	0.162***	0.0610***
	(0.00646)	(0.00248)	(0.00641)	(0.00246)
afqt_score	-0.00374***	-0.00139***	-0.00369***	-0.00137***
	(0.000152)	(5.65e-05)	(0.000150)	(5.58e-05)
pg	-0.120***	-0.0446***	-0.119***	-0.0443***
	(0.00355)	(0.00132)	(0.00351)	(0.00130)
NO_DEPENDENTS	0.0893***	0.0327***	0.0895***	0.0327***
	(0.0126)	(0.00452)	(0.0124)	(0.00446)
First_Enl_NPS_NB	-0.00318	-0.00118	-0.00643	-0.00238
	(0.00835)	(0.00310)	(0.00830)	(0.00308)
Y1999	0.702***	0.273***	0.704***	0.274***
	(0.0111)	(0.00425)	(0.0110)	(0.00421)
Y2000	0.613***	0.239***	0.615***	0.240***
	(0.0111)	(0.00433)	(0.0110)	(0.00429)
Y2001	0.613***	0.239***	0.614***	0.240***
	(0.0114)	(0.00446)	(0.0113)	(0.00442)
Y2002	0.615***	0.240***	0.612***	0.239***
	(0.0105)	(0.00409)	(0.0104)	(0.00407)
Y2003	0.577***	0.225***	0.575***	0.224***
	(0.0106)	(0.00414)	(0.0105)	(0.00411)
Y2004	0.528***	0.206***	0.526***	0.205***
	(0.0116)	(0.00455)	(0.0115)	(0.00452)
Y2005	0.361***	0.140***	0.357***	0.138***
	(0.0107)	(0.00424)	(0.0107)	(0.00421)
Y2006	0.167***	0.0633***	0.167***	0.0633***
	(0.0102)	(0.00394)	(0.0101)	(0.00390)
Alabama	0.224***	0.0859***		
	(0.0194)	(0.00765)		
Alaska	0.130***	0.0495***		
	(0.0462)	(0.0179)		
Arkansas	0.0312*	0.0117		
	(0.0189)	(0.00710)		
Arizona	0.258***	0.0995***		
	(0.0257)	(0.0102)		

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite45	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
Colorado	0.0747***	0.0281***		
	(0.0205)	(0.00779)		
Connecticut	0.165***	0.0631***		
	(0.0336)	(0.0131)		
Delaware	0.140***	0.0533**		
	(0.0535)	(0.0207)		
District_of_Columbia	0.191**	0.0731**		
	(0.0744)	(0.0292)		
Florida	0.0510***	0.0191***		
	(0.0119)	(0.00450)		
Georgia	0.0641***	0.0241***		
	(0.0150)	(0.00570)		
Hawaii	-0.125***	-0.0451***		
	(0.0416)	(0.0147)		
Idaho	-0.0246	-0.00909		
	(0.0333)	(0.0123)		
Illinois	0.215***	0.0823***		
	(0.0147)	(0.00576)		
Indiana	0.203***	0.0779***		
	(0.0193)	(0.00756)		
Iowa	0.161***	0.0614***		
	(0.0302)	(0.0118)		
Kansas	0.139***	0.0528***		
	(0.0274)	(0.0106)		
Kentucky	0.282***	0.109***		
	(0.0236)	(0.00936)		
Louisiana	0.252***	0.0971***		
	(0.0192)	(0.00758)		
Maine	0.0679*	0.0255*		
	(0.0387)	(0.0147)		
Maryland	0.168***	0.0643***		
	(0.0193)	(0.00752)		
Massachusetts	0.161***	0.0613***		
	(0.0266)	(0.0104)		
Michigan	0.106***	0.0399***		
	(0.0162)	(0.00620)		
Minnesota	0.123***	0.0468***		
	(0.0247)	(0.00953)		
Mississippi	0.236***	0.0907***		
	(0.0245)	(0.00966)		
Missouri	0.210***	0.0807***		
	(0.0186)	(0.00731)		
Montana	0.0639*	0.0240*		
	(0.0364)	(0.0138)		
Nebraska	0.156***	0.0593***		
	(0.0329)	(0.0128)		
Nevada	0.0337	0.0126		
	(0.0263)	(0.00988)		
New_Hampshire	0.0888**	0.0335*		
	(0.0451)	(0.0173)		

	Probit	**Marginal**	**Probit**	**Marginal**
Cohort Analysis Attrite45	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
New_Jersey	0.129***	0.0488***		
	(0.0184)	(0.00712)		
New_Mexico	0.0478	0.0179		
	(0.0304)	(0.0115)		
New_York	0.0470***	0.0176***		
	(0.0134)	(0.00506)		
North_Carolina	0.150***	0.0571***		
	(0.0159)	(0.00616)		
North_Dakota	-0.0509	-0.0187		
	(0.0692)	(0.0252)		
Ohio	0.166***	0.0632***		
	(0.0149)	(0.00580)		
Oklahoma	0.284***	0.110***		
	(0.0215)	(0.00853)		
Oregon	0.0734***	0.0276***		
	(0.0222)	(0.00844)		
Pennsylvania	0.139***	0.0529***		
	(0.0153)	(0.00593)		
Rhode_Island	0.190***	0.0726***		
	(0.0554)	(0.0217)		
South_Carolina	0.121***	0.0458***		
	(0.0203)	(0.00781)		
South_Dakota	0.109**	0.0414**		
	(0.0517)	(0.0199)		
Tennessee	0.186***	0.0711***		
	(0.0189)	(0.00739)		
Texas	0.150***	0.0570***		
	(0.0106)	(0.00407)		
Utah	0.140***	0.0534***		
	(0.0355)	(0.0138)		
Vermont	0.0646	0.0243		
	(0.0719)	(0.0273)		
Virginia	0.0260	0.00972		
	(0.0165)	(0.00620)		
Washington	-0.0252	-0.00931		
	(0.0185)	(0.00682)		
West_Virginia	0.208***	0.0796***		
	(0.0339)	(0.0133)		
Wisconsin	0.0994***	0.0376***		
	(0.0230)	(0.00881)		
Wyoming	0.0236	0.00881		
	(0.0529)	(0.0198)		
Constant	1.046***		1.147***	
	(0.0420)		(0.0409)	
Observations	283,022	283,022	286,482	286,482

Appendix Table E: Models using Cohort Data
Dependent Variable: Attrite6 (during six months of service of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite6	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0420***	-0.00873***	-0.0413***	-0.00861***
	(0.00304)	(0.000631)	(0.00302)	(0.000629)
black	-0.151***	-0.0298***	-0.148***	-0.0294***
	(0.00834)	(0.00156)	(0.00795)	(0.00150)
asian	-0.205***	-0.0381***	-0.300***	-0.0530***
	(0.0180)	(0.00297)	(0.0171)	(0.00250)
native	0.00300	0.000624	0.00253	0.000529
	(0.0127)	(0.00264)	(0.0124)	(0.00260)
other_race	-0.0762***	-0.0153***	-0.101***	-0.0200***
	(0.0121)	(0.00234)	(0.0118)	(0.00222)
educ_years	-0.0512***	-0.0107***	-0.0494***	-0.0103***
	(0.00326)	(0.000678)	(0.00322)	(0.000670)
age	0.0219***	0.00456***	0.0212***	0.00442***
	(0.00110)	(0.000228)	(0.00108)	(0.000225)
female	0.263***	0.0599***	0.259***	0.0591***
	(0.00748)	(0.00185)	(0.00742)	(0.00183)
afqt_score	-0.00353***	-0.000734***	-0.00354***	-0.000737***
	(0.000185)	(3.85e-05)	(0.000183)	(3.81e-05)
pg	-0.101***	-0.0209***	-0.0987***	-0.0206***
	(0.00443)	(0.000919)	(0.00437)	(0.000909)
No_Dependents	0.146***	0.0282***	0.145***	0.0279***
	(0.0157)	(0.00279)	(0.0156)	(0.00277)
First_Enl_NPS_NB	0.0355***	0.00748***	0.0315***	0.00663***
	(0.0101)	(0.00216)	(0.0101)	(0.00215)
Y1999	0.502***	0.130***	0.508***	0.131***
	(0.0128)	(0.00390)	(0.0127)	(0.00389)
Y2000	0.402***	0.0995***	0.407***	0.101***
	(0.0130)	(0.00372)	(0.0129)	(0.00370)
Y2001	0.347***	0.0845***	0.350***	0.0854***
	(0.0135)	(0.00376)	(0.0134)	(0.00374)
Y2002	0.191***	0.0433***	0.190***	0.0433***
	(0.0130)	(0.00320)	(0.0129)	(0.00318)
Y2003	-0.00675	-0.00140	-0.00812	-0.00168
	(0.0140)	(0.00290)	(0.0139)	(0.00288)
Y2004	0.0887***	0.0193***	0.0892***	0.0194***
	(0.0148)	(0.00336)	(0.0147)	(0.00334)
Y2005	0.0975***	0.0212***	0.0930***	0.0202***
	(0.0135)	(0.00307)	(0.0134)	(0.00304)
Y2006	0.00858	0.00179	0.0101	0.00211
	(0.0128)	(0.00269)	(0.0127)	(0.00266)
Alabama	0.190***	0.0438***		
	(0.0234)	(0.00591)		
Alaska	-0.0394	-0.00801		
	(0.0599)	(0.0119)		
Arkansas	0.108***	0.0238***		
	(0.0227)	(0.00529)		

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite6	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
Arizona	0.285***	0.0688***		
	(0.0298)	(0.00818)		
Colorado	0.127***	0.0282***		
	(0.0248)	(0.00588)		
Connecticut	0.206***	0.0478***		
	(0.0397)	(0.0102)		
Delaware	0.188***	0.0434***		
	(0.0632)	(0.0160)		
District_of_Columbia	0.152*	0.0344		
	(0.0891)	(0.0218)		
Florida	0.0812***	0.0176***		
	(0.0148)	(0.00332)		
Georgia	0.0924***	0.0202***		
	(0.0186)	(0.00425)		
Hawaii	-0.106**	-0.0207**		
	(0.0538)	(0.00988)		
Idaho	0.0465	0.00993		
	(0.0410)	(0.00899)		
Illinois	0.179***	0.0409***		
	(0.0178)	(0.00440)		
Indiana	0.239***	0.0562***		
	(0.0228)	(0.00600)		
Iowa	0.211***	0.0492***		
	(0.0356)	(0.00920)		
Kansas	0.172***	0.0392***		
	(0.0329)	(0.00819)		
Kentucky	0.246***	0.0583***		
	(0.0276)	(0.00733)		
Louisiana	0.254***	0.0603***		
	(0.0225)	(0.00601)		
Maine	0.0633	0.0136		
	(0.0477)	(0.0106)		
Maryland	0.148***	0.0333***		
	(0.0235)	(0.00570)		
Massachusetts	0.136***	0.0305***		
	(0.0325)	(0.00780)		
Michigan	0.157***	0.0355***		
	(0.0195)	(0.00474)		
Minnesota	0.187***	0.0429***		
	(0.0294)	(0.00741)		
Mississippi	0.251***	0.0597***		
	(0.0287)	(0.00767)		
Missouri	0.223***	0.0520***		
	(0.0221)	(0.00572)		
Montana	0.107**	0.0236**		
	(0.0440)	(0.0103)		
Nebraska	0.192***	0.0443***		
	(0.0393)	(0.00996)		
Nevada	0.0754**	0.0163**		
	(0.0322)	(0.00726)		

	Probit	Marginal	Probit	Marginal
Survival Analysis Attrite6	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
New_Hampshire	0.140**	0.0314**		
	(0.0547)	(0.0132)		
New_Jersey	0.128***	0.0284***		
	(0.0224)	(0.00532)		
New_Mexico	0.115***	0.0254***		
	(0.0363)	(0.00853)		
New_York	0.0881***	0.0192***		
	(0.0165)	(0.00374)		
North_Carolina	0.134***	0.0298***		
	(0.0196)	(0.00467)		
North_Dakota	-0.113	-0.0220		
	(0.0918)	(0.0167)		
Ohio	0.205***	0.0473***		
	(0.0179)	(0.00453)		
Oklahoma	0.281***	0.0677***		
	(0.0248)	(0.00679)		
Oregon	0.0770***	0.0167***		
	(0.0272)	(0.00616)		
Pennsylvania	0.158***	0.0355***		
	(0.0186)	(0.00451)		
Rhode_Island	0.216***	0.0505***		
	(0.0653)	(0.0170)		
South_Carolina	0.175***	0.0400***		
	(0.0245)	(0.00608)		
South_Dakota	0.222***	0.0521***		
	(0.0599)	(0.0157)		
Tennessee	0.208***	0.0484***		
	(0.0227)	(0.00581)		
Texas	0.142***	0.0314***		
	(0.0130)	(0.00305)		
Utah	0.206***	0.0478***		
	(0.0417)	(0.0107)		
Vermont	0.0649	0.0140		
	(0.0881)	(0.0197)		
Virginia	0.0583***	0.0125***		
	(0.0206)	(0.00456)		
Washington	0.0319	0.00674		
	(0.0230)	(0.00495)		
West_Virginia	0.173***	0.0397***		
	(0.0401)	(0.0100)		
Wisconsin	0.183***	0.0421***		
	(0.0274)	(0.00688)		
Wyoming	0.0140	0.00294		
	(0.0660)	(0.0139)		
Constant	-0.794***		-0.672***	
	(0.0503)		(0.0490)	
Observations	283,022	283,022	286,482	286,482

Appendix Table F: Models using Cohort Data Dependent Variable: Attrite12 (between 6-12 months of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite12	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0171***	-0.00173***	-0.0169***	-0.00171***
	(0.00419)	(0.000425)	(0.00417)	(0.000423)
black	-0.137***	-0.0130***	-0.125***	-0.0119***
	(0.0111)	(0.000987)	(0.0106)	(0.000955)
asian	-0.225***	-0.0192***	-0.285***	-0.0232***
	(0.0254)	(0.00179)	(0.0243)	(0.00155)
native	0.0185	0.00190	0.0162	0.00166
	(0.0164)	(0.00171)	(0.0161)	(0.00167)
other_race	-0.0613***	-0.00596***	-0.0729***	-0.00703***
	(0.0161)	(0.00150)	(0.0156)	(0.00143)
educ_years	-0.0468***	-0.00475***	-0.0467***	-0.00473***
	(0.00427)	(0.000433)	(0.00423)	(0.000428)
age	-0.00485***	-0.000492***	-0.00487***	-0.000493***
	(0.00152)	(0.000155)	(0.00151)	(0.000152)
female	0.0567***	0.00592***	0.0532***	0.00555***
	(0.0103)	(0.00110)	(0.0102)	(0.00109)
afqt_score	0.000707***	7.18e-05***	0.000734***	7.44e-05***
	(0.000242)	(2.46e-05)	(0.000240)	(2.43e-05)
pg	-0.101***	-0.0103***	-0.102***	-0.0104***
	(0.00591)	(0.000596)	(0.00585)	(0.000590)
No_Dependents	0.0116	0.00116	0.0130	0.00130
	(0.0206)	(0.00206)	(0.0204)	(0.00203)
First_Enl_NPS_NB	-0.0280**	-0.00280**	-0.0295**	-0.00295**
	(0.0140)	(0.00138)	(0.0140)	(0.00137)
Y1999	0.358***	0.0462***	0.359***	0.0464***
	(0.0173)	(0.00274)	(0.0172)	(0.00273)
Y2000	0.359***	0.0462***	0.361***	0.0465***
	(0.0174)	(0.00275)	(0.0173)	(0.00274)
Y2001	0.336***	0.0430***	0.340***	0.0437***
	(0.0179)	(0.00280)	(0.0178)	(0.00279)
Y2002	0.266***	0.0324***	0.266***	0.0323***
	(0.0168)	(0.00241)	(0.0168)	(0.00239)
Y2003	0.197***	0.0230***	0.199***	0.0231***
	(0.0175)	(0.00230)	(0.0174)	(0.00229)
Y2004	0.237***	0.0286***	0.238***	0.0287***
	(0.0188)	(0.00263)	(0.0187)	(0.00261)
Y2005	0.153***	0.0173***	0.152***	0.0171***
	(0.0178)	(0.00222)	(0.0177)	(0.00220)
Y2006	0.0882***	0.00950***	0.0886***	0.00953***
	(0.0172)	(0.00196)	(0.0170)	(0.00194)
Alabama	0.148***	0.0168***		
	(0.0300)	(0.00382)		
Alaska	0.0713	0.00767		
	(0.0719)	(0.00818)		
Arkansas	-0.0169	-0.00169		
	(0.0307)	(0.00304)		

Survival Analysis Attrite12	**Probit Regression w/State Dummies**	**Marginal Effects w/State Dummies**	**Probit Regression without State Dummies**	**Marginal Effects without State Dummies**
Arizona	0.121***	0.0135***		
	(0.0396)	(0.00485)		
Colorado	0.0170	0.00175		
	(0.0330)	(0.00344)		
Connecticut	-0.0202	-0.00202		
	(0.0561)	(0.00550)		
Delaware	0.00157	0.000160		
	(0.0878)	(0.00893)		
District_of_Columbia	0.188*	0.0223		
	(0.113)	(0.0154)		
Florida	0.0204	0.00210		
	(0.0195)	(0.00204)		
Georgia	0.0274	0.00284		
	(0.0247)	(0.00262)		
Hawaii	-0.0750	-0.00715		
	(0.0726)	(0.00650)		
Idaho	0.0131	0.00135		
	(0.0523)	(0.00542)		
Illinois	0.176***	0.0204***		
	(0.0224)	(0.00293)		
Indiana	0.124***	0.0139***		
	(0.0297)	(0.00364)		
Iowa	0.0448	0.00471		
	(0.0478)	(0.00522)		
Kansas	0.0264	0.00274		
	(0.0441)	(0.00467)		
Kentucky	0.0905**	0.00987**		
	(0.0367)	(0.00429)		
Louisiana	0.163***	0.0188***		
	(0.0291)	(0.00378)		
Maine	-0.0527	-0.00512		
	(0.0643)	(0.00598)		
Maryland	0.106***	0.0117***		
	(0.0304)	(0.00363)		
Massachusetts	0.157***	0.0180***		
	(0.0404)	(0.00523)		
Michigan	0.0489*	0.00516*		
	(0.0258)	(0.00282)		
Minnesota	0.0354	0.00370		
	(0.0395)	(0.00425)		
Mississippi	0.104***	0.0114**		
	(0.0385)	(0.00460)		
Missouri	0.117***	0.0131***		
	(0.0287)	(0.00349)		
Montana	-0.0171	-0.00171		
	(0.0590)	(0.00582)		
Nebraska	0.0537	0.00570		
	(0.0521)	(0.00577)		
Nevada	-0.0158	-0.00158		
	(0.0434)	(0.00429)		

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite12	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
New_Hampshire	0.0107	0.00110		
	(0.0730)	(0.00754)		
New_Jersey	0.0908***	0.00990***		
	(0.0290)	(0.00339)		
New_Mexico	0.00422	0.000429		
	(0.0484)	(0.00494)		
New_York	0.0286	0.00296		
	(0.0217)	(0.00230)		
North_Carolina	0.0936***	0.0102***		
	(0.0254)	(0.00297)		
North_Dakota	0.0333	0.00347		
	(0.107)	(0.0115)		
Ohio	0.0669***	0.00714***		
	(0.0237)	(0.00266)		
Oklahoma	0.123***	0.0138***		
	(0.0326)	(0.00401)		
Oregon	0.0979***	0.0107***		
	(0.0340)	(0.00402)		
Pennsylvania	0.0771***	0.00830***		
	(0.0242)	(0.00276)		
Rhode_Island	0.0973	0.0107		
	(0.0863)	(0.0102)		
South_Carolina	0.0645**	0.00689*		
	(0.0328)	(0.00368)		
South_Dakota	0.0208	0.00215		
	(0.0819)	(0.00860)		
Tennessee	0.101***	0.0111***		
	(0.0299)	(0.00355)		
Texas	0.0943***	0.0102***		
	(0.0168)	(0.00192)		
Utah	0.0405	0.00425		
	(0.0563)	(0.00610)		
Vermont	-0.0326	-0.00322		
	(0.119)	(0.0114)		
Virginia	0.00772	0.000788		
	(0.0272)	(0.00280)		
Washington	-0.0942***	-0.00887***		
	(0.0314)	(0.00273)		
West_Virginia	0.134***	0.0151**		
	(0.0507)	(0.00635)		
Wisconsin	0.0741**	0.00798*		
	(0.0359)	(0.00410)		
Wyoming	0.0237	0.00245		
	(0.0828)	(0.00874)		
Constant	-0.982***		-0.926***	
	(0.0676)		(0.0661)	
Observations	283,022	283,022	286,482	286,482

Appendix Table G: Models using Cohort Data
Dependent Variable: Attrite24 (between 12–24 months of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite24	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0452***	-0.00643***	-0.0452***	-0.00643***
	(0.00394)	(0.000558)	(0.00394)	(0.000558)
black	-0.000978	-0.000139	-0.000978	-0.000139
	(0.00931)	(0.00132)	(0.00931)	(0.00132)
asian	-0.244***	-0.0294***	-0.244***	-0.0294***
	(0.0221)	(0.00221)	(0.0221)	(0.00221)
native	0.0378***	0.00549**	0.0378***	0.00549**
	(0.0146)	(0.00217)	(0.0146)	(0.00217)
other_race	-0.0500***	-0.00689***	-0.0500***	-0.00689***
	(0.0142)	(0.00190)	(0.0142)	(0.00190)
educ_years	-0.0686***	-0.00974***	-0.0686***	-0.00974***
	(0.00377)	(0.000534)	(0.00377)	(0.000534)
age	-0.00724***	-0.00103***	-0.00724***	-0.00103***
	(0.00134)	(0.000190)	(0.00134)	(0.000190)
female	-0.0561***	-0.00777***	-0.0561***	-0.00777***
	(0.00931)	(0.00126)	(0.00931)	(0.00126)
afqt_score	-0.00227***	-0.000323***	-0.00227***	-0.000323***
	(0.000212)	(3.01e-05)	(0.000212)	(3.01e-05)
pg	-0.0597***	-0.00848***	-0.0597***	-0.00848***
	(0.00507)	(0.000719)	(0.00507)	(0.000719)
NO_DEPENDENTS	-0.00344	-0.000490	-0.00344	-0.000490
	(0.0177)	(0.00252)	(0.0177)	(0.00252)
First_Enl_NPS_NB	-0.00515	-0.000730	-0.00515	-0.000730
	(0.0125)	(0.00177)	(0.0125)	(0.00177)
Y1999	0.336***	0.0580***	0.336***	0.0580***
	(0.0156)	(0.00318)	(0.0156)	(0.00318)
Y2000	0.340***	0.0585***	0.340***	0.0585***
	(0.0157)	(0.00320)	(0.0157)	(0.00320)
Y2001	0.348***	0.0607***	0.348***	0.0607***
	(0.0160)	(0.00333)	(0.0160)	(0.00333)
Y2002	0.307***	0.0522***	0.307***	0.0522***
	(0.0151)	(0.00299)	(0.0151)	(0.00299)
Y2003	0.438***	0.0800***	0.438***	0.0800***
	(0.0147)	(0.00328)	(0.0147)	(0.00328)
Y2004	0.370***	0.0658***	0.370***	0.0658***
	(0.0162)	(0.00346)	(0.0162)	(0.00346)
Y2005	0.284***	0.0476***	0.284***	0.0476***
	(0.0153)	(0.00297)	(0.0153)	(0.00297)
Y2006	0.173***	0.0271***	0.173***	0.0271***
	(0.0148)	(0.00256)	(0.0148)	(0.00256)
Alabama	0.0620**	0.00919**	0.0620**	0.00919**
	(0.0264)	(0.00409)	(0.0264)	(0.00409)
Alaska	0.162***	0.0259**	0.162***	0.0259**
	(0.0603)	(0.0107)	(0.0603)	(0.0107)
Arkansas	-0.0483*	-0.00664*	-0.0483*	-0.00664*
	(0.0271)	(0.00359)	(0.0271)	(0.00359)

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite24	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
Arizona	0.0450	0.00660	0.0450	0.00660
	(0.0354)	(0.00535)	(0.0354)	(0.00535)
Colorado	-0.0258	-0.00360	-0.0258	-0.00360
	(0.0292)	(0.00400)	(0.0292)	(0.00400)
Connecticut	0.00505	0.000721	0.00505	0.000721
	(0.0475)	(0.00679)	(0.0475)	(0.00679)
Delaware	-0.0117	-0.00165	-0.0117	-0.00165
	(0.0756)	(0.0106)	(0.0756)	(0.0106)
District_of_Columbia	0.0389	0.00569	0.0389	0.00569
	(0.101)	(0.0151)	(0.101)	(0.0151)
Florida	0.00108	0.000153	0.00108	0.000153
	(0.0167)	(0.00238)	(0.0167)	(0.00238)
Georgia	-0.0169	-0.00237	-0.0169	-0.00237
	(0.0211)	(0.00293)	(0.0211)	(0.00293)
Hawaii	-0.102	-0.0134*	-0.102	-0.0134*
	(0.0624)	(0.00763)	(0.0624)	(0.00763)
Idaho	-0.111**	-0.0145**	-0.111**	-0.0145**
	(0.0489)	(0.00590)	(0.0489)	(0.00590)
Illinois	0.0999***	0.0152***	0.0999***	0.0152***
	(0.0199)	(0.00321)	(0.0199)	(0.00321)
Indiana	0.0287	0.00416	0.0287	0.00416
	(0.0270)	(0.00399)	(0.0270)	(0.00399)
Iowa	0.0351	0.00511	0.0351	0.00511
	(0.0420)	(0.00627)	(0.0420)	(0.00627)
Kansas	0.00172	0.000244	0.00172	0.000244
	(0.0386)	(0.00549)	(0.0386)	(0.00549)
Kentucky	0.124***	0.0193***	0.124***	0.0193***
	(0.0313)	(0.00525)	(0.0313)	(0.00525)
Louisiana	0.0454*	0.00665*	0.0454*	0.00665*
	(0.0261)	(0.00394)	(0.0261)	(0.00394)
Maine	0.0938*	0.0142*	0.0938*	0.0142*
	(0.0516)	(0.00835)	(0.0516)	(0.00835)
Maryland	0.0866***	0.0131***	0.0866***	0.0131***
	(0.0261)	(0.00417)	(0.0261)	(0.00417)
Massachusetts	0.0759**	0.0114**	0.0759**	0.0114**
	(0.0367)	(0.00578)	(0.0367)	(0.00578)
Michigan	0.000950	0.000135	0.000950	0.000135
	(0.0227)	(0.00323)	(0.0227)	(0.00323)
Minnesota	-0.0148	-0.00208	-0.0148	-0.00208
	(0.0353)	(0.00492)	(0.0353)	(0.00492)
Mississippi	0.0705**	0.0105**	0.0705**	0.0105**
	(0.0329)	(0.00515)	(0.0329)	(0.00515)
Missouri	0.0803***	0.0120***	0.0803***	0.0120***
	(0.0254)	(0.00401)	(0.0254)	(0.00401)
Montana	-0.0163	-0.00228	-0.0163	-0.00228
	(0.0516)	(0.00716)	(0.0516)	(0.00716)
Nebraska	0.0245	0.00355	0.0245	0.00355
	(0.0462)	(0.00680)	(0.0462)	(0.00680)
Nevada	-0.00861	-0.00122	-0.00861	-0.00122
	(0.0371)	(0.00521)	(0.0371)	(0.00521)

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite24	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
New_Hampshire	-0.0121	-0.00170	-0.0121	-0.00170
	(0.0645)	(0.00901)	(0.0645)	(0.00901)
New_Jersey	0.0176	0.00253	0.0176	0.00253
	(0.0256)	(0.00373)	(0.0256)	(0.00373)
New_Mexico	-0.0672	-0.00911	-0.0672	-0.00911
	(0.0434)	(0.00559)	(0.0434)	(0.00559)
New_York	-0.0166	-0.00233	-0.0166	-0.00233
	(0.0188)	(0.00262)	(0.0188)	(0.00262)
North_Carolina	0.0506**	0.00744**	0.0506**	0.00744**
	(0.0219)	(0.00333)	(0.0219)	(0.00333)
North_Dakota	-0.0171	-0.00239	-0.0171	-0.00239
	(0.0967)	(0.0134)	(0.0967)	(0.0134)
Ohio	0.0393*	0.00574*	0.0393*	0.00574*
	(0.0207)	(0.00309)	(0.0207)	(0.00309)
Oklahoma	0.0711**	0.0106**	0.0711**	0.0106**
	(0.0290)	(0.00455)	(0.0290)	(0.00455)
Oregon	-0.00407	-0.000577	-0.00407	-0.000577
	(0.0314)	(0.00443)	(0.0314)	(0.00443)
Pennsylvania	0.0469**	0.00688**	0.0469**	0.00688**
	(0.0212)	(0.00321)	(0.0212)	(0.00321)
Rhode_Island	0.00618	0.000882	0.00618	0.000882
	(0.0788)	(0.0113)	(0.0788)	(0.0113)
South_Carolina	-0.0395	-0.00547	-0.0395	-0.00547
	(0.0288)	(0.00387)	(0.0288)	(0.00387)
South_Dakota	-0.0378	-0.00523	-0.0378	-0.00523
	(0.0741)	(0.00997)	(0.0741)	(0.00997)
Tennessee	0.0452*	0.00662*	0.0452*	0.00662*
	(0.0264)	(0.00399)	(0.0264)	(0.00399)
Texas	0.0492***	0.00718***	0.0492***	0.00718***
	(0.0146)	(0.00220)	(0.0146)	(0.00220)
Utah	-0.00229	-0.000325	-0.00229	-0.000325
	(0.0503)	(0.00712)	(0.0503)	(0.00712)
Vermont	-0.0809	-0.0108	-0.0809	-0.0108
	(0.106)	(0.0134)	(0.106)	(0.0134)
Virginia	0.000186	2.65e-05	0.000186	2.65e-05
	(0.0231)	(0.00328)	(0.0231)	(0.00328)
Washington	-0.0552**	-0.00754**	-0.0552**	-0.00754**
	(0.0265)	(0.00349)	(0.0265)	(0.00349)
West_Virginia	0.0656	0.00975	0.0656	0.00975
	(0.0458)	(0.00713)	(0.0458)	(0.00713)
Wisconsin	-0.00813	-0.00115	-0.00813	-0.00115
	(0.0327)	(0.00460)	(0.0327)	(0.00460)
Wyoming	0.0888	0.0134	0.0888	0.0134
	(0.0700)	(0.0112)	(0.0700)	(0.0112)
Constant	-0.192***		-0.192***	
	(0.0601)		(0.0601)	
Observations	283,022	283,022	283,022	283,022

Appendix Table H: Models using Cohort Data
Dependent Variable: Attrite45 (between 24-45 months of service)

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite45	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
unemployment_rate	-0.0416***	-0.0416***	-0.308***	-0.0415***
	(0.000935)	(0.000935)	(0.00814)	(0.000930)
black	0.00491***	0.00491***	0.0386***	0.00530***
	(0.00126)	(0.00126)	(0.00864)	(0.00121)
asian	-0.0256***	-0.0256***	-0.249***	-0.0283***
	(0.00208)	(0.00208)	(0.0201)	(0.00189)
native	0.00764***	0.00764***	0.0586***	0.00821***
	(0.00209)	(0.00209)	(0.0142)	(0.00206)
other_race	-0.00796***	-0.00796***	-0.0699***	-0.00904***
	(0.00183)	(0.00183)	(0.0142)	(0.00176)
educ_years	-0.00613***	-0.00613***	-0.0465***	-0.00628***
	(0.000499)	(0.000499)	(0.00365)	(0.000493)
age	-0.000930***	-0.000930***	-0.00725***	-0.000978***
	(0.000176)	(0.000176)	(0.00129)	(0.000173)
female	0.00123	0.00123	0.00820	0.00111
	(0.00122)	(0.00122)	(0.00892)	(0.00121)
afqt_score	-0.000265***	-0.000265***	-0.00192***	-0.000259***
	(2.80e-05)	(2.80e-05)	(0.000205)	(2.77e-05)
pg	-0.00397***	-0.00397***	-0.0300***	-0.00404***
	(0.000665)	(0.000665)	(0.00487)	(0.000657)
NO_DEPENDENTS	0.000126	0.000126	0.00453	0.000610
	(0.00234)	(0.00234)	(0.0172)	(0.00231)
First_Enl_NPS_NB	-0.00127	-0.00127	-0.00953	-0.00128
	(0.00182)	(0.00182)	(0.0135)	(0.00181)
Y1999	0.0296***	0.0296***	0.195***	0.0296***
	(0.00275)	(0.00275)	(0.0160)	(0.00273)
Y2000	0.0149***	0.0149***	0.104***	0.0149***
	(0.00258)	(0.00258)	(0.0166)	(0.00256)
Y2001	0.0452***	0.0452***	0.281***	0.0451***
	(0.00305)	(0.00305)	(0.0160)	(0.00303)
Y2002	0.184***	0.184***	0.850***	0.183***
	(0.00432)	(0.00432)	(0.0153)	(0.00429)
Y2003	0.217***	0.217***	0.956***	0.216***
	(0.00484)	(0.00484)	(0.0164)	(0.00481)
Y2004	0.149***	0.149***	0.719***	0.148***
	(0.00436)	(0.00436)	(0.0161)	(0.00432)
Y2005	0.0751***	0.0751***	0.430***	0.0749***
	(0.00322)	(0.00322)	(0.0151)	(0.00320)
Y2006	0.0261***	0.0261***	0.174***	0.0260***
	(0.00240)	(0.00240)	(0.0144)	(0.00238)
Alabama	0.0112***	0.0112***		
	(0.00386)	(0.00386)		
Alaska	0.0134	0.0134		
	(0.00962)	(0.00962)		
Arkansas	-0.00285	-0.00285		
	(0.00346)	(0.00346)		

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite45	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
Arizona	0.00611	0.00611		
	(0.00500)	(0.00500)		
Colorado	0.00141	0.00141		
	(0.00388)	(0.00388)		
Connecticut	0.0132*	0.0132*		
	(0.00691)	(0.00691)		
Delaware	0.00777	0.00777		
	(0.0104)	(0.0104)		
District_of_Columbia	0.00634	0.00634		
	(0.0138)	(0.0138)		
Florida	-0.000891	-0.000891		
	(0.00220)	(0.00220)		
Georgia	0.00124	0.00124		
	(0.00281)	(0.00281)		
Hawaii	-0.00167	-0.00167		
	(0.00768)	(0.00768)		
Idaho	-0.00329	-0.00329		
	(0.00595)	(0.00595)		
Illinois	0.00119	0.00119		
	(0.00276)	(0.00276)		
Indiana	0.00306	0.00306		
	(0.00371)	(0.00371)		
Iowa	0.00144	0.00144		
	(0.00573)	(0.00573)		
Kansas	0.00591	0.00591		
	(0.00529)	(0.00529)		
Kentucky	0.0117**	0.0117**		
	(0.00474)	(0.00474)		
Louisiana	0.00633*	0.00633*		
	(0.00365)	(0.00365)		
Maine	0.00217	0.00217		
	(0.00727)	(0.00727)		
Maryland	0.00244	0.00244		
	(0.00363)	(0.00363)		
Massachusetts	-0.000393	-0.000393		
	(0.00503)	(0.00503)		
Michigan	-0.00106	-0.00106		
	(0.00299)	(0.00299)		
Minnesota	0.00254	0.00254		
	(0.00476)	(0.00476)		
Mississippi	0.00458	0.00458		
	(0.00462)	(0.00462)		
Missouri	0.000620	0.000620		
	(0.00351)	(0.00351)		
Montana	0.00309	0.00309		
	(0.00693)	(0.00693)		
Nebraska	0.00468	0.00468		
	(0.00641)	(0.00641)		
Nevada	-0.00147	-0.00147		
	(0.00485)	(0.00485)		

	Probit	**Marginal**	**Probit**	**Marginal**
Survival Analysis Attrite45	**Regression w/State Dummies**	**Effects w/State Dummies**	**Regression without State Dummies**	**Effects without State Dummies**
New_Hampshire	0.00157	0.00157		
	(0.00855)	(0.00855)		
New_Jersey	0.00617*	0.00617*		
	(0.00356)	(0.00356)		
New_Mexico	0.000810	0.000810		
	(0.00553)	(0.00553)		
New_York	-0.00181	-0.00181		
	(0.00243)	(0.00243)		
North_Carolina	0.00658**	0.00658**		
	(0.00309)	(0.00309)		
North_Dakota	-0.000392	-0.000392		
	(0.0125)	(0.0125)		
Ohio	0.00137	0.00137		
	(0.00280)	(0.00280)		
Oklahoma	0.00897**	0.00897**		
	(0.00422)	(0.00422)		
Oregon	0.000538	0.000538		
	(0.00420)	(0.00420)		
Pennsylvania	0.000918	0.000918		
	(0.00288)	(0.00288)		
Rhode_Island	0.00633	0.00633		
	(0.0110)	(0.0110)		
South_Carolina	0.00386	0.00386		
	(0.00384)	(0.00384)		
South_Dakota	-0.00561	-0.00561		
	(0.00920)	(0.00920)		
Tennessee	0.00360	0.00360		
	(0.00369)	(0.00369)		
Texas	0.00488**	0.00488**		
	(0.00203)	(0.00203)		
Utah	0.00137	0.00137		
	(0.00673)	(0.00673)		
Vermont	0.0229	0.0229		
	(0.0154)	(0.0154)		
Virginia	-0.00409	-0.00409		
	(0.00296)	(0.00296)		
Washington	0.000545	0.000545		
	(0.00345)	(0.00345)		
West_Virginia	0.00927	0.00927		
	(0.00664)	(0.00664)		
Wisconsin	-0.00924**	-0.00924**		
	(0.00404)	(0.00404)		
Wyoming	-0.00567	-0.00567		
	(0.00924)	(0.00924)		
Constant			0.770***	
			(0.0670)	
Observations	283,022	283,022	286,482	286,482

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